REPORT RESUMES

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A COMPARISON OF EDUCATIONAL OUTCOMES UNDER SINGLE-TRACK AND TWO-TRACK PLANS FOR EDUCABLE MENTALLY RETARDED CHILDREN.

BY- WRIGHTSTONE, J. WAYNE   AND OTHERS

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THIS STUDY SOUGHT TO COMPARE THE EDUCATIONAL CHANGES OF EDUCABLE MENTALLY RETARDED CHILDREN ENROLLED IN THE EXPERIMENTAL TWO-TRACK PROGRAM WITH THOSE CHANGES OF MATCHED EDUCABLES ENROLLED IN A ONE-TRACK PLAN. ABOUT 1,800 PUPILS IN CLASSES FOR THE EDUCABLE MENTALLY RETARDED PARTICIPATED IN THIS STUDY. THEY HAD IQ'S RANGING FROM 50-75, WERE FROM 6 TO 18 YEARS OLD, AND WERE DRAWN FROM VARYING ETHNIC, CULTURAL, AND SOCIOECONOMIC LEVELS. PUPILS WERE DIVIDED INTO ONE-TRACK AND INTO TWO-TRACK CLASSES. UNDER THE TWO-TRACK PLAN, EACH PUPIL WAS PLACED EITHER IN A CLASS FOR HIGH ACHIEVERS OR A CLASS FOR LOW ACHIEVERS. UNDER THE SINGLE-TRACK PLAN, HIGH ACHIEVERS AS WELL AS LOW ACHIEVERS WERE PLACED IN THE SAME CLASS AND TAUGHT BY THE SAME TEACHER. IN COMPARING THE EFFECTIVENESS OF THE TWO PLANS, BOTH OBJECTIVE AND SUBJECTIVE DATA WERE USED, AND THE MATCHED PAIR TECHNIQUE WAS EMPLOYED. IN FIFTEEN STUDIES, NO DIFFERENCES IN ACHIEVEMENT WERE FOUND BETWEEN HOMOGENEOUS OR HETEROGENEOUS GROUPING, AND NO HARMFUL EFFECTS FROM HOMOGENEOUS GROUPING. ON THE OTHER HAND, 13 OF THESE STUDIES FOUND DIFFERENCES FAVORING HOMOGENEOUS GROUPING, AND 5 REPORTED RESULTS PARTIALLY FAVORABLE AND PARTIALLY UNFAVORABLE TO HOMOGENEOUS GROUPING. (GC)

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A COMPARISON OF EDUCATIONAL OUTCOMES UNDER SINGLE-TRACK AND TWO-TRACK PLANS FOR EDUCABLE MENTALLY RETARDED CHILDREN

OFFICIAL RESEARCH FILE COPY

by

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PREFACE

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In developing and implementing this research project, the cooperation and talents of many individuals and groups were enlisted. Acknowledgement is here made to William Jansen former Superintendent of Schools, and to his successor John J. Theobald for making available the extensive and varied resources of the New York City School System.

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The principals of schools, the teachers of classes and their supervisors who participated in this project are too numerous to name individually here but are given in a separate list on pages 205 to 210 of this report. The many extra tasks requested of these educators over the two and a half year period of this research project, gave the Study the vital data and cooperation needed for evaluation. The suggestions of many of these individuals have been incorporated in various activities of the Study.

This research endeavor could not be successfully carried on without the fullest cooperation and contributions of a staff dedicated to the attainment of its stated goals. To attain these goals in the alloted time, many innovations had to be developed by this research team. Foremost of this group are the following:

> George Forlano, Project Director, whose guidance and contributions were invaluable to all phases of the Study including: research design, test development, and compilation and editing of the final research document.
>
> J. Richard Lepkowski, Assistant Project Director, who coordinated the daily activities of this Study. He contributed heavily to the design, measurement techniques, development of tests, and writing and editing of this report.
>
> Marvin Sontag, Research Psychologist, who handled most of the Project's administrative duties. He made a valuable contribution to the test development, experimental design, and statistical analyses of this project.

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Mary Deighan, Research Psychologist, deserves mention for although she joined the Study in its final phases, she contributed much to the preparation of preliminary drafts of parts of this research document.

Richard F. Cumbo, who as a statistical worker handled much of the statistical treatment of the data, and whose assistance in administrative functions was invaluable.

Mildred Bellucci, who typed the entire final copy of this report.

Marilyn Greek, who typed many preliminary reports and performed the varied clerical duties required by the Study.

October, 1959
Brooklyn, New York

J. WAYNE WRIGHTSTONE
Principal Investigator

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INTRODUCTION

Providing an optimum learning environment through appropriate class organization design for retarded children has been a problem with which the Bureau for Children with Retarded Mental Development has been actively concerned for many years. Close observation of the operation of the current organization of CRMD classes (Classes for Children with Retarded Mental Development) revealed that moderate success with retarded children was achieved, and that to achieve greater success a modification of the existing organization was required. As a result, a new structure or pattern for CRMD classes was developed which, it was believed, would promote the growth and achievement of all retarded children in the CRMD classes in the City of New York.

The basic principle for the suggested reorganization plan is to provide significantly different pathways for those children who are capable of getting and holding jobs, and for those children, the slow retardates, who probably are not able to become financially independent. Placement in one of the two tracks is made on the basis of various criteria developed by the bureau concerned.

The next major step in the development of the reorganization plan was to subject it to experimentation and evaluation, the purpose of which was to provide sound answers to the basic questions raised by the innovation of the plan.

Fortunately, shortly before the time of the launching of this reorganization plan the Office of Education, United States Department of Health, Education, and Welfare had embarked upon its new program of cooperative research projects as delineated under Public Law 531, 83rd Congress. Public Law 531, authorizes the Office of Education to, "enter into contracts or jointly financed cooperative arrangements with universities and colleges and State educational agencies for the conduct of research, surveys, and demonstrations in the field of education."

The need and significance of an adequate evaluation of the proposed reorganization plan for mental retardates was initially discussed in conference with Dr. Romaine P. Mackie, Chief, Exceptional Children and Youth Section, United States Office of Education and with members of the Bureau for Children with Retarded Mental Development, Bureau of Child Guidance, and the Bureau of Educational Research. Moreover, it was felt by all concerned that the New York City School System provided a laboratory for studies on the education of the mentally handicapped which is available in few, if any, cities in the United States. Consequently, a specific plan for the comparison of the educational outcomes under the current organization and the proposed reorganization of CRMD classes was prepared.

The evaluation proposal was sponsored jointly by the New York State Education Department and the Board of Education of the City of New York. The proposal was approved by the United States Office of Education in 1957 and became officially known as the New York City Study of Mentally Handicapped Children, Cooperative Research Project Number 144, Contract Number 6908, "A Comparison of Educational Outcomes Under Single-Track and Two-Track Plans for

Educable Mentally Retarded Children."

The Bureau of Educational Research in close cooperation with the Bureau for Children with Retarded Mental Development conducted the evaluation program. The Bureau of Child Guidance and the Bureau of Curriculum Research worked closely with the Bureau CRMD in planning the best educational program possible for the tracks.

J.W.W.
G.F.

CHAPTER I

OBJECTIVES OF THE STUDY

Statement of the Problem

The purpose of this study was to compare the educational changes of educable mentally retarded children enrolled in an experimental two-track program with changes of matched mentally retarded pupils enrolled in a one-track program in the New York City schools. Under the two-track program the pupils were first classified as to level of educability and than assigned to the appropriate high educable or low educable homogeneous class. Under the one-track program pupils were not classified, and were heterogeneously grouped.

The traditional method of assigning mentally retarded pupils to one-track classes did not give special consideration to the accumulation in any one class, of pupils of prescribed educational potentials and rates of learning. Rather, these classes were formed primarily by age groups with secondary consideration being given to such features as degrees of similarity of individual emotional and social adjustment to that of the class.

The newer plan called for a reassigment of pupils so that the individual is grouped with others of his approximate age and promise of educational growth. This plan was designed with two tracks upon which to channel mental retardates; a high educable track for pupils with the most educational potential, and a low educable track for the less promising.

The main aim of the study then, was to determine and compare the effectiveness of these two plans of organization in meeting the wide range of individual differences in ability, needs, and interests of mentally retarded children. It was understood that the experimental (two-track) program might adapt the curriculum to its special situation and needs.

Specific Objectives

In the evaluation of the relative merits of the two systems of organizing classes for mentally handicapped children, the New York City Study was faced with the task of pursuing a number of subsidiary problems in order to obtain the most complete findings possible in the time allowed. These subproblems cover some of the more important aspects of pupil growth, teacher and supervisor evaluation of the effects of the programs, as well as parental opinions.

The specific objectives to be attained before an answer to the main problem could be formulated were as follows:

1. To compare the effectiveness of the organization, procedures and

curriculum of the two-track and one-track plans for pupil growth in several areas.

a. Academic achievement. Measures of comparison were obtained in reading, arithmetic and the core curriculum. The latter is a specially designed area of study so constructed as to meet some of the needs of the retardate for certain essential knowledge of the home, the neighborhood, larger community, and occupational information as he progresses through the years.

b. Motor coordination. Teacher ratings of the pupil's gross motor coordination were obtained. Individual tests of eye-hand coordination were administered.

c. Speech. Teacher's and psychologist's ratings of pupil's growth in oral communication, with special attention being given to comprehension of questions and the relevance, clarity and spontaneity of responses, were obtained.

d. Personal and social adjustment. Emphasis in this area was placed on the adjustment of the retardate in the class setting.

e. Attitudes, activities and interests. Pupil's attitudes towards school were stressed. Activities and interests of the pupil, particularly in his after-school hours, were also investigated.

f. Peer acceptance. Two aspects of peer acceptance were considered; one was concerned with the individual pupil's acceptance of his classmates, and the other, the acceptance of the pupil by his classmates.

2. To assess the reactions of parents, supervisors and teachers of classes of mentally handicapped, and of school principals toward the two-track and one-track plans.

3. To compare the effectiveness of the two plans in preparing educable mentally retarded pupils to make good occupational adjustments in the community.

4. To evaluate the current pupil classification criteria, and develop additional criteria for the selection and placement of educable mentally retarded children.

5. To develop required tests and measures not available but needed for the proper conduct of the research.

Hypotheses

1. Modern educational practice provides for individual differences. When the composition of a class is heterogeneous, in terms of educability, those pupils at the extremes of ability may be subjected to an instructional pace and content ill-suited to their needs. The teachers of classes having wide ranges of ability are faced with the necessity of dividing their time

among many instructional groups, while the teachers of classes with narrow ranges of ability have fewer instructional groups with which to cope. The reorganization of classes into homogeneous educable groups forces a minimization of the range of ability within any one of them. Assuming the teachers of the wide ability (heterogeneous - control) classes have approximately similar educational background and experience teaching retarded children as the teachers of the narrow ability (homogeneous - experimental) classes, it would be expected that no significant differences in gains in the areas of academic achievement, manual skills, and speech would be manifested between the two types of classes unless one or the other is more effective in meeting the needs of the pupils.

2. Classes of mentally retarded children of the same age differ considerably in social maturity as well as in mental age. Since most classes of mentally retarded in the New York City school system are divided into the young, intermediate, and older levels, the age differences within these classes are relatively wide. These age differences, superimposed upon the differences in intellectual capacity, further increase the range of social maturity. A division of mentally retarded pupils into high and low educable classes reduces the range of social maturity, and would be expected to result in a greater acceptance by pupils of other members of the class. Personal and social adjustment, attitudes, activities and interests, as well as peer acceptance, would be expected to improve.

Assuming the pupils who are placed in each of the two plans have comparable capacities for social growth it is hypothesized that no significant differences in gains in this area are to be expected unless the effects of one plan of organization are superior to the other.

3. The plan which evidences the greater gains in the areas covered in the first objective would also be expected to show more favorable reactions on the part of parents, supervisors, teachers and school principals. It is pointed out, however, that should the analysis of the first two hypotheses show lack of differences between the groups, it would not preclude an interpretation or minimize any differences found in the analysis of the reactions of parents and school personnel. The possibility exists that parents and/or educators could react to dimensions other than those tapped by the tests and measures employed.

4. The organizational plan which provides a better occupational instruction and guidance program would be expected to reflect a better occupational adjustment in the community.

Significance of the Problem

The Board of Education of the City of New York through its several Bureaus, is continually searching for newer techniques or adapting older ones in an effort to make better use of the alloted instructional hours. For many years, the Bureau for Children with Retarded Mental Development has given considerable study to the problem of raising to optimal effectiveness its educational program. The current thinking of key members of this Bureau[1] indicates that perhaps the moderate successes that are now attained would be augmented if the organizational placement of retarded children were changed. Briefly stated, the present organizational plan has retarded pupils of low educable potential grouped with those of high educable potential. The reorganization of these mixed classes would separate the classes for instructional purposes into more homogeneous educable groups.

Part of the responsibility of the Bureau of Child Guidance is to test pupils who have been recommended for placement in special classes. In addition to establishing the placement for these cases in either regular (normal) or special classes, (including CRMD), psychologists of the Bureau of Child Guidance suggest specific types of remedial programs for the individual pupils. The availability of high educable and low educable classes, as proposed by the reorganization, would facilitate the implementation of the psychologist's suggestions by Bureau CRMD supervisors.

Besides the effects any changes in organizational structure might have on the pupils, consideration must also be given to the impact such changes might have on the teaching staff. It is presently believed that a reorganization of classes into homogeneous groupings would produce a more satisfying teaching experience in that teacher time would not have to be spread over several different teaching levels within the class. Instead, more time could be alloted to a given group with the expectation of more apparent gains in academic growth. From the standpoint of teacher morale, it is important that the effects of teaching be manifested to them at reasonably short intervals. This is especially critical in teaching the mentally handicapped where, at best, educational growth must be measured over longer periods of time.

Any organizational change resulting in more efficient use of both pupil and teacher time must necessarily have a favorable economic reflection due to the fact that a larger return is realized from the educational dollar. This is a prime factor in an era of high costs, rising taxes and a growing demand for increased differential educational facilities to meet the needs of an expanding population.

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[1] Hereinafter the Bureau for Children with Retarded Mental Development will also be identified as Bureau CRMD, and CRMD classes will refer to classes for children with retarded mental development.

CHAPTER II

RELATED RESEARCH

Some Philosophies of Education for the Mentally Retarded

Educators of the mentally retarded generally favor a different developmental program rather than a remedial adaptation of a normal program for these pupils. Social and vocational competence, broadly conceived, are the major goals for such a program. It is generally accepted that these goals can be furthered only in special classes for the mentally handicapped, rather than within the regular grades. Kirk and Johnson, for example, include in their definition of the mentally handicapped child the qualification that he be one who is "unable to profit sufficiently from the curriculum of the public schools, but who can be educated to become socially adequate and occupationally competent, provided special educational facilities are furnished." By special educational facilities Kirk and Johnson mean special classes for the mentally handicapped.[1]

Some educators have gone further and advocated narrower ranges of individual differences, where possible, for special classes for the mentally retarded. The reasons advanced are in many respects similar to those advanced for special developmental programs and special classes. For example, Ingram points out the desirablity of limiting the overlap in learning ability, physical maturity and social maturity within classes of mentally handicapped.[2] One important advantage in reducing the range of age and social development within a class, Ingram believes, is the narrowing of the range of pupil interests and of probable responses to any given appeal.[3]

However, the idea that the 50-75 I.Q. group of retardates belong in special classes has been questioned by some educators. As is usually the case for the arguments advanced in favor of special or more homogeneous classes, the reasons for questioning or opposing such classes are also often quite general, and might very well be applied in some fashion to excessive homogeneity at any level of ability. Featherstone, in questioning the value of special, segregated groupings for slow-learners of 70-85 I.Q., makes the following points:[1]

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[1] Samuel A. Kirk and G. Orville Johnson, Educating the Retarded Child. Cambridge, Mass: Houghton Mifflin Company, 1951. p. 13.

[2] Christine P. Ingram, Education of the Slow-Learning Child. New York: The Ronald Press Company, 1953. p. 81.

[3] Ibid, p. 85.

a. Many or most of the difficulties in instructing slow-learners in mixed groups derive from the attempt to apply an overly fixed curriculum.

b. All classes are heterogeneous. "Segregated slow groups are about as heterogeneous in ability and in every other way, and as hard to teach effectively as are mixed groups."

c. "...what kind of group offers the best possibilities for a particular individual is extremely difficult to say. Some children achieve good belongingness, security and status in families made up of very diverse ages and backgrounds; others do not."

d. The cohesiveness of a group is a function of its purpose —— whether there exists "a problem, plan, activity or project in which all are involved in some measure, and to which all can make a contribution."

e. "...many teachers do not have as much skill as is needed to teach heterogeneous groups..." This may be the fault of the teacher educating institutions, or of the school systems.

f. Individuals of diverse backgrounds and talents should learn to live together. The schools should not "persist in emphasizing the difficulties that divide people rather than the likenesses that unite them."

Clearly some of Featherstone's cautions have application to the issue of homogeneous versus heterogeneous classes within the 50-75 I.Q. group in the public schools, as well as to special versus regular grade classes for the sections of mentally retarded pupils.

Even the value of relatively narrow ranges of chronological age within classes has been questioned by educators. This point of view is relevant to the present experiment, since the reorganization of classes in the two-track plan provides for narrower ranges of age, as well as of educability, as advocated by Ingram and others. Jeannette Veatch of New York University Elementary Education Department has suggested the following possible advantages for a general policy of including broader age levels within regular classes by foregoing yearly promotions:[2]

a. the children would be more cooperative and less segregative in character;

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[1] The quotes in these points are taken from W. B. Featherstone, "Grouping in Relation to the Education of Slow-Learners," Journal of Exceptional Children, (XIX, 1948), pp. 172-175.

[2] Jeannette Veatch, "Grouping in the Whole School." Childhood Education V;XXX, 1943, (p. 2).

b. the richness of individual differences would stimulate the children's interests; and

c. the teacher would be released, by virtue of the circumstances, from the confines of a strict body of subject-matter.

While the latter point would hardly apply to classes of mentally handicapped organized around broad core units of instruction, it is conceivable that overly homogeneous groups of retardates might decrease tolerance of individual differences and provide inadequate stimulation for pupil interests.

Recent Studies

Apparently there has been little research in recent years on homogeneity of class grouping within the mentally handicapped range. Even the value of special classes for the mentally handicapped is still a matter for investigation, and it is in this area that research most relevant to the present experiment has been conducted. Previous research on the value of special classes is relevant to the present study partly because special classes for the mentally handicapped are themselves relatively homogeneous groupings, and partly because the research methods were related in some respects to those of the present study. Two recent studies, concluded in 1956, are described below.

Ellenbogen conducted a study of mentally handicapped children in regular and special classes of the Chicago elementary public schools.[1] The special classes had smaller memberships, a specially designed curriculum, and teachers trained to work with the mentally handicapped. The pupils had been in the special classes for the previous two years. The pupils in regular classes followed a regular academic program. The two groups of pupils were matched on age, sex, I.Q. and school district. The mean age was 13.46 for both groups, and the mean I.Q.'s were approximately 70.5. The I.Q.'s were the most recent obtained on the Revised Stanford-Binet Scales administered by qualified psychologists. Academic achievement in reading and arithmetic were measured by the Stanford Achievement Tests, with no more than five children tested at a time. The classroom teachers evaluated the pupils on school adjustment by means of ratings given during personal interviews. Pupils were interviewed on vocational aspirations, social adjustment, and attitude toward school.

The children in the regular classes were found to have significantly higher mean scores over children in the special classes in paragraph meaning, word meaning, arithmetic computation and arithmetic reasoning. On the other hand, the children in special classes had significantly higher mean teacher ratings of school adjustment, more realistic vocational aspirations, and more after-school jobs. The attitudes toward school were similar in both groups. The significant differences were attributed to the effects of the different class placement. Ellenbogen's finding of higher teacher ratings of school adjustment for the pupils in special classes seems related to previous findings of Johnson,[1] and Johnson and Kirk,[2] that mentally retarded children are isolated and rejected by other children in the regular grades.

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[1] Morton L. Ellenbogen, "A Comparative Study of Some Aspects of Academic and Social Adjustment of Two Groups of Mentally Retarded Children in Special Classes and in Regular Grades." (Publication No.23,562). Northwestern University, Ed D., 1957.

A study by Blatt[3] on mentally handicapped elementary school children in Blair and Clearfield Counties, Pennsylvania, compared seventy-five special class pupils with fifty pupils in regular elementary classes. The groups were equated on age, sex, and I.Q. The total of 125 children came from 19 different schools and 45 classrooms.

Although the heights and weights of the two groups did not differ significantly, 25% of the special class children as compared to 10% of the children in regular classes were found to be more than 10% underweight. The special class children had significantly more uncorrected or permanent physical defects. Thus, the two groups were not precisely matched on physical charactertistics at the time of the investigation.

No significant differences were found between the two groups on days absent from school, strength of grip, vertical jump, motor ability (as measured by the Brace Scale of Motor Ability), scores on the California Test of Personality for personal and social adjustment, delinquencies and behavior records, numbers of hobbies and interests, or scores on the California Achievement Tests for reading, arithmetic, and language achievement.

Instances of Homogeneous Class Groupings

At the time of writing, the public school system of Kansas City, Missouri had special classes for upper and lower classification of retardates.[4] Children were placed in classes for the deficient group, I.Q. approximately 50-65 (performance and other factors in agreement), or in classes for the ungraded group, I.Q. 65-80. Class sizes were limited to approximately 15 and 20 for the deficient and ungraded groups, respectively.

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[1] G. O. Johnson, "A Study of the Social Position of Mentally Handicapped Children in the Regular Grades," American Journal of Mental Deficiency, 55, (July, 1950). pp.60-89.

[2] G. O. Johnson, and S. A. Kirk, "Are Mentally Handicapped Children Segregated in the Regular Grades?" Journal of Exceptional Children, (December, 1950). pp. 65-68, 87-88.

[3] Burton Blatt, "The Physical, Personality and Academic Status of Children Who are Mentally Retarded Attending Special Classes as Compared with Children Who are Mentally Retarded Attending Regular Classes." (Publication No.19,333). Penn. State University, Ed. D., 1956.

[4] Based upon a personal communication dated February 4, 1959, from Miss Nelle Dabney, Director of Special Education, Public Schools, Kansas City, Missouri.

The homogeneous class groupings in New York City, which were evaluated through the present experiment, are described in Chapter III.

In addition to the new program of homogeneous classes which was evaluated by the Study, New York City had for some time been selecting its more capable retardates from special education classes in the junior high schools and sending them to special classes in the high schools.

Elizabeth M. Kelley, Director of Special Education of the Newark, New Jersey public schools, has advocated a three-way division of older retardates in special classes. After a close observation of retardates in special classes for those between the ages of 12-6 and 14-5, a division is suggested into classes for high and low educable up to the age of 17-5. With the understanding that I.Q.'s are not to be used rigidly for classification purposes, and that intellectual and social functional ability should be given first consideration, I.Q. groupings of 50-64 and 65-79 are recommended. Kelley expresses the view that "it is just as important for those in this classification of the mentally retarded (I.Q. 65-79) to be unhampered educationally and emotionally as it is for normal and above normal boys and girls of the same chronological age group to be unimpeded scholastically by the dull normal and the mentally retarded."[1]

In addition to the division into groups corresponding roughly to the two I.Q. groups mentioned above, Kelley believes that perhaps the 50-64 group should be further divided into retardates of the endogenous and exogenous types, with different kinds of school organization and planning for these two groups. The outlook for the endogenous type is considered by Kelley to be better, since these retardates tend to be more stable emotionally. The exogenous type is "inclined to have narrow interests and in general adjustment to be rigid and conforming. This type of mentally retarded person is usually verbal and derives his greatest satisfaction from academic achievement....A program with emphasis on the occupational approach is not only unsatisfactory for persons in this group, but it is frustrating."[2]

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1. Elizabeth Kelley, "Are We Providing Opportunities for the Older Mentally Retarded?" Journal of Exceptional Children, (May 1955), pp. 297-299, 309.

2. Ibid, 298.

CHAPTER III

THE GENERAL NATURE OF THE MENTALLY RETARDED POPULATION AND THE PLANS OF INSTRUCTION

Characteristics of the General Pupil Population

During the 1957-1958 school year, there were approximately 11,000 pupils between the ages of six and eighteen in 700 CRMD classes in New York City. These pupils had I.Q.'s between 50 and 75, with mental ages between approximately 4 and 12.[1]

The large majority of CRMD pupils enter from the regular grades. Many teachers and school administrators believe that younger pupils suspected of mental retardation should be observed until at least the end of the second year before a diagnosis of retardation is made. The fact of mental retardation may be difficult to differentiate from other types of disabilities and may be obscured until even later ages.

In addition to these pupils who enter CRMD from the normal grades, others enter at beyond the minimum ages from parochial schools; from private schools; from other parts of the country, particularly the south; and from areas outside the continental United States, particularly Puerto Rico. Lastly, parents differ in their judgment of the maturational or educational level that they believe their retarded children should reach before placing them in school. As a result of these various factors thirty percent of all pupils entering CRMD during 1957 were eleven years of age or older (see Table I, page 11).

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[1] The Bureau CRMD also had under its jurisdiction classes for children with I.Q.'s between 30 and 49. Such classes were not included in the present experiment, as the children were not affected by the reorganization. Classes of this type are called Low I.Q. not CRMD classes.

TABLE I

Percents by Sex of 1372 Boys and 876 Girls Entering CRMD
Classes at the Various Age Levels During the Period
January 1, 1957 to December 31, 1957

Ages	Percents of Total Entrants		Cumulative Percents	
	Boys	Girls	Boys	Girls
6-0 to 6-11	4.6	5.4	4.6	5.4
7-0 to 7-11	14.4	13.2	19.0	18.6
8-0 to 8-11	15.5	12.6	34.5	31.2
9-0 to 9-11	14.2	15.4	48.7	46.6
10-0 to 10-11	11.3	11.6	60.0	58.2
11-0 to 11-11	9.5	11.3	69.5	69.5
12-0 to 12-11	10.9	10.0	80.4	79.5
13-0 to 13-11	7.7	9.9	88.1	89.4
14-0 to 14-11	7.0	6.9	95.1	96.3
15-0 to 15-11	4.4	3.1	99.5	99.4
16-0 to 16-11	.5	0.6	100.00	100.00
Total	100.0	100.0		

The distribution of the CRMD population among the various age levels depends upon many factors such as changes in birthrate during and after World War II, the ages of entrants into CRMD, and dropout from CRMD for various reasons. The median age of all pupils in CRMD classes was approximately 13 years during the 1957 calendar year excluding high school pupils. Almost one quarter of all CRMD pupils were younger than eleven, while another quarter were fifteen or older (see Table II, page 12). However, of this latter quarter (about 2700 pupils) approximately 500 were in high school CRMD classes. This group was not included in the experiment since very few, if any, Educable II pupils can meet the requirements for high school.

TABLE II

Frequency and Percent at Various Chronological Age Levels of Pupils Enrolled in CRMD Classes Excluding High School Classes as of October 1, 1957

Ages	Boys		Girls	
	N	Percents	N	Percents
6-0 to 6-11	10	0.18	14	.34
7-0 to 7-11	88	1.54	67	1.64
8-0 to 8-11	274	4.79	172	4.21
9-0 to 9-11	451	7.89	282	6.90
10-0 to 10-11	570	9.98	467	11.43
11-0 to 11-11	644	11.27	468	11.45
12-0 to 12-11	752	13.16	538	13.16
13-0 to 13-11	703	12.30	571	13.97
14-0 to 14-11	849	14.86	608	14.87
15-0 to 15-11	771	13.49	542	13.26
16-0 to 16-11	482	8.44	282	6.90
17-0 to 17-11	100	1.75	65	1.59
18-0 to 18-11	20	0.35	11	.27
Total	5714	100.00	4087	100.00

While the large majority of children who enter CRMD classes remain until such time as they leave school, a considerable number eventually change their circumstances either favorably or unfavorably. During the school year ending June 1958, approximately 120 of the 11,000 CRMD children returned to normal grades. An estimated minimum of 150 were placed in institutions of various kinds, while approximately 100 received medical discharges.

Approximately 400 of 1200 CRMD pupils between the ages of 15-6 and 16-6 entered high school during the 1957-1958 school year. As pupils of these ages were thus removed from the experiment, it is worthwhile to briefly note their characteristics to better understand those of pupils remaining in junior high school beyond the ages of 15-6 or 16-6. Pupils who enter high school from CRMD classes must have a grade equivalent in reading and arithmetic of not less than 3.5 based on the results of standardized tests. Any pronounced physical defect, especially one which makes training hazardous may render a pupil ineligible for high school. A poor attendance record, a poor prognosis for eventual employment, low emotional stability or social maturity, poor dexterity, or low interest in vocational training might also exclude a pupil from high school.[1] In practice, a relatively small percent of pupils below 60 I.Q. are admitted to high school.

The distribution of I.Q.'s among CRMD children in New York City on October 31, 1957, excluding those in high schools, revealed that 16% were within the 50-59 range; 45% were within the 60-69 range; and 39% were between 70 and 75. Some of the children were listed as having an I.Q. that was "approximately 50" or "approximately 75", thus indicating the desire of the examining psychologist to have the child watched closely for a possible change in status. In many instances, such listing of the pupil's I.Q. on the cumulative record card was accompanied by a specific recommendation for re-examination within a reasonable period.

Characteristics of Classes Under the Two Plans of Instruction

The classes under the non-reorganized (one-track) plan were arranged heterogeneously primarily on the basis of age, with other factors taken into account. Some consideration was given to social maturity, emotional stability, and physical factors, but primarily in those instances where a particular child would have been a misfit in a particular class.

Under the two-track plan, the reorganized plan, the educability of the pupils was a prime consideration, along with age, in forming classes. Moreover, homogeneous groupings were made possible by concentrating numbers of CRMD classes within the confines of a single school.

Educable I (high educable) classes under the reorganization were designed to include children with a good occupational prognosis, and good chances of meeting the requirements for high school admission. Educable II (low educable) classes were formed with the remaining CRMD children.

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[1] William Jansen, Special Circular No. 40, 1954-1955; Board of Education of the City of New York; Office of the Superintendent of Schools, March 7, 1955.

The characteristics of pupils intended for Educable I and Educable II classes are outlined below, as taken directly from the Manual for Teachers on Reorganization of Classes for Children with Retarded Mental Development prepared by the Bureau for Children with Retarded Mental Development, April 1958.

A. Description of characteristics of pupils to be placed in Educable I classes of the two-track plan.

1. Physical

a. Have few or no physical deviations which will distinguish them from the normal.

b. Have motor development and coordination approximating the normal.

c. At the adolescent level, have the potential for participating in an integrated school shop, a recreational and a social program with normal children.

2. Intellectual

a. Generally have I.Q.'s 60-75. (In some cases where the I.Q. does not seem to be indicative of the true functioning level, pupils with I.Q.'s 50-60 will be included in Ed I Track).

b. Prognosis for achievement in reading and mathematics may extend through the fifth year.

c. Have minimum mental ages of approximately 5 years.

d. May, through motivation, extend their attention span for academic work.

e. Are capable of discrimination in situations involving common danger to themselves and others, but fail in subtler situations where keener judgment is the factor.

3. Social and Emotional

a. Participate in and contribute to group situations at their level.

b. Lack the ability to discriminate in subtle social situations.

c. Manifest weakened drive to pursue tasks to conclusion.

d. Behave in a stereotyped fashion in that they bring little creativity to a situation and are usually followers.

e. Usually have difficulty in initiating, developing and maintaining friendships.

f. Have aspirations and aspiration levels imposed by society which are frequently higher than those they are capable of reaching.

g. Are amenable to suggestion, and are easily influenced by those about them.

h. Meet more frustration, resulting in more emotional strain and over-compensation in coping with the daily happenings of a culture geared to the normal individual.

i. Need opportunities more than the normal to develop socially desirable attitudes and integrated behavior which will be acceptable to his peer group and the community at large.

j. Have patterns of speech for communication which do not differ significantly from those of their native environment.

4. Vocational

a. Comprise the upper 70 percent of the mentally retarded.

b. Are capable of profiting from carefully and approximately selected occupational - vocational experiences.

c. Will be employable in competitive industry in unskilled and semi-skilled jobs.

B. Description of characteristics of pupils to be placed in Educable II classes of the two-track plan.

1. Physical

a. Are known to have many more physical defects, than Educable I pupils.

b. Frequently have physical stigmata.

c. Have defective or faulty speech.

d. Tend to have awkward or defective gait.

e. Have poor gross muscular coordination and poor manipulative ability.

2. Intellectual

   a. Generally have I.Q.'s 50-59. (In some cases where the I.Q. does not seem to be indicative of the functioning level, pupils with I.Q.'s will be included in Ed II pupils.)

   b. Prognosis for achievement in reading and mathematics is not beyond second year.

   c. May have defective and faulty speech, but may respond to corrective training; may have potential for intelligible speech adequate to meet their life needs and to fulfil the demands of the environment in which they function.

   d. May exhibit many or all of such limiting characteristics as the following:

      (1). Poor sensory discrimination
      (2). Little or no concept of time or quantity
      (3). Very short attention span
      (4). Very limited judgment in social and physical situations
      (5). Little or no initiative
      (6). Little or no creativity
      (7). Inability to shift from one stimulus to another (perseveration), or may shift attention frequently and apparently with little or no cause (distractibility).

   e. Will have limited judgment in social and physical situations involving danger to themselves and others.

3. Social and Emotional

   a. Will have greater difficulty in making adjustments in the home, school and community than the Educable I child.

   b. Will attain acceptable levels of social maturity under close supervision.

   c. Tend to engage in solitary and parallel activities, and, under direction, can engage in cooperative activities to a limited degree.

   d. Because of personal and social limitations, find themselves unable to relate readily to other children in their peer groups.

e. Social difficulties tend to increase as they approach the post-school period unless special services are provided.

f. Have basic emotional needs similar to those of the normal children.

g. Have higher incidence of emotional instability.

h. Have low level of frustration tolerance.

4. Vocational

a. Some may have a limited potential of being gainfully employed in unskilled areas after suitable training.

(1). As marginal, part-time, or seasonal workers
(2). As dependent workers under sheltered conditions (public, private, home).

b. Others have no vocational potential in competitive industry or sheltered workshops but may contribute some service in the home or in a custodial environment.

C. Summary of Educable I and Educable II characteristics

Educable I pupils have I.Q.'s which fall generally in the 60-75 range, but in many cases the minimum mental age is not usually lower than approximately 5 years. They are expected to progress in reading and mathematics through the fifth year. Their physical features and motor coordination approximate the normal. Socially and emotionally they must be stable enough to participate in and contribute to group situations as required at their level. Expectation of employability must be favorable.

Educable II pupils generally have I.Q.'s between 50-59. The prognosis of achievement of low educable children does not go beyond the second year. These children evidence more physical defects than those of higher educability. Socially and emotionally the Educable II pupil is limited in ability to adjust to the world around him; therefore, he requires close supervision. Vocationally, relatively few of them become gainfully employed.

Using the lists of characteristics of Educable I and Educable II pupils as guides, Bureau CRMD personnel were able to achieve a greater homogeneity with respect to age, intelligence and educability within the classes in the two-track plan. In other words, ranges of mental age were narrowed through the reduction of chronological age ranges as well as differences in intellectual and vocational potential.

The ages specified by the Bureau CRMD for various levels of the reorganized plan are given in Table III. In this table it may be seen that the median ages, as well as age ranges, differ at various levels across the two plans. For example, the range specified for Intermediate I Classes was 11 to 13 years of age, with a median age necessarily less than 13, while Intermediate Classes under the non-reorganized plan had a range extending above and below 13 years. Junior high classes under the experimental plan were divided into three year levels for pupils from the 13th through the 15th years, while all junior high pupils older than 13 in the non-reorganized plan were grouped into only one level - Older Classes.

TABLE III

Age Ranges Used as a Guide in Setting Up Non-Reorganized and Reorganized CRMD Classes

Class Designation	Ages
Non-Reorganized Plan	
Vestibule	6-0 through 10-11
Young	through 12-11, less than 4 yr. C.A. range
Young, Wide Age Range	through 12-11, more than 4 yr. C.A. range
Intermediate*	C.A. range falls above and below 13, less than 4 yr. C.A. range
Intermediate Wide Age Range	C.A. range falls above and below 13, more than 4 yr. C.A. range
Older	all pupils 13-0 and above, less than 4 yr. C.A. range
Older Wide Age Range	all pupils 13-0 and above, more than 4 yr. C.A. range
High School	approx. 16-0 and above, for qualified pupils only.
Reorganized Plan	
Vestibule	6-0 through 10-11
Educable I (higher educable) Classes	
Primary I	6-0 through 10-11
Intermediate	11-0 through 12-11
Jr. H.S. - 7th	approx. 13-0 through 13-11
Jr. H.S. - 8th	approx. 14-0 through 14-11
Jr. H.S. - 9th	approx. 15-0 through 15-11
High School	approx. 16-0 and above.
Educable II (lower educable) Classes	
Primary II	7-0 through 10-11
Intermediate II	11-0 through 13-11
Jr. H.S., Limited Participation	14-0 and above.

* One or two pupils held in the class beyond age 13 because of immaturity should not make this an Intermediate Class.

Differences in Ratios of Boys to Girls

At all educational levels except the junior high the sex ratios in the two plans of instruction were substantially the same. This finding was generally prevalent both in the schools and in the CRMD classes. At the junior high school level, there were more all boy and all girl classes in the one-track plan as compared to the two-track plan. Eighteen of the thirty homogeneous experimental classes (60%) were mixed (boys and girls) as compared to only five of the thirty-three control classes (15%). At the inauguration of the two-track plan, the opportunity had been taken to implement the Board of Education's general policy of establishing classes of boys with girls wherever possible. This policy was acted upon for the new plan except in such cases where reorganized classes existed in the junior high schools which did not have both sexes. Apart from the Board of Education's policy in favor of mixed classes, the reorganized plan found it administratively necessary to establish such classes in order to get sufficient pupils to form classes that were more homogeneous with respect to educability.

Instructional Groupings Other than by Official Class

Neither the non-reorganized nor the reorganized plans adhered strictly to official class lines for instructional purposes. Thus, in many cases mixed classes of boys and girls were encountered during part of the day even for pupils in like sex official classes. For example, at the junior high level, it was common practice to send children, individually or in groups, to shop classes consisting primarily of normal pupils. In instances where two or more CRMD classes existed within the confines of a single school, it was the policy of the Bureau CRMD to "departmentalize" across class lines for purposes of instruction in reading, arithmetic, occupational and other subject areas.

The Curriculums

Instruction for pupils under the non-reorganized plan and for the high educable pupils of the new plan centered around eight major units of instruction called cores. These cores followed in sequence - each core being suited for mentally handicapped children of a particular range of age and mental ability. During the first four years of CRMD instruction, the cores include subject matter related primarily to the home, the school, and the larger community; during the fourth year some emphasis is given to occupational information. During the second four years of instruction, the subject matter is related to jobs, budgeting, and citizenship.

The curriculum for the Educable II pupils was organized to meet the special needs of the low achieving child whose wants physically, socially, emotionally, as well as academically, were not being adequately met within the framework of the curriculum for the CRMD classes under the single track plan.

In the Educable II curriculum greater stress is placed on motor-sensory activities while the basic essentials are refined and geared to the more limited potentials of these pupils. There are fewer cores than in the Educable I curriculum with a longer developmental period assigned to each core. Such essential elements as personal and social competency, health and safety, manual and academic skills, guidance, moral and spiritual values have been integrated. Recreation and avocational skills have not been neglected.

The spiral development of the curriculum from primary through junior high school has been retained. However, the ultimate goals for the Educable II pupils have been significantly reduced in keeping with the prognoses based upon a realistic appraisal of the potentialities of these pupils.

CHAPTER IV

TESTS AND MEASURES

General Problems of Measurement of Mentally Retarded Pupils

One of the main objectives of the Study is to compare the effectiveness of the one-track and two-track plans for pupil growth in various areas. These areas include academic achievement, personal and social adjustment, attitudes and interests, and selected manual tasks.

At the onset of the experiment, the Study had few measurement tools suited for use with mentally retarded pupils. Initial conferences with the administrators, supervisors, and teachers of the Bureau for Children with Retarded Mental Development revealed agreement that no tests of general information or occupational information existed that would adequately reflect the curriculum for CRMD classes. No standardized measures of adjustment or school behavior of mentally retarded pupils were in use with the exception of simple overall ratings of social maturity and emotional stability of pupils by CRMD teachers. Standardized tests of reading and mathematics were in use by the Bureau CRMD, but these tests were designed for normal populations and were not considered wholly satisfactory in content, format and method of administration for many of the mental retardates. Subsequent tryouts, observations of test administrations, and review of available tests by

outs, observations of test administrations, and review of available tests by

the Study's staff confirmed the view generally held by the Bureau CRMD personnel.

Mentally retarded pupils in the 50-75 I.Q. range differ in certain respects from pupils in a normal population. The differences necessitate a somewhat modified testing approach for these pupils to be able to demonstrate their acquired skills and learning. Some of the ways in which mentally retarded pupils differ from normal children, and the testing approaches taken by the Study in its group-administered tests to meet these variances, are as follows:

1. The majority of pupils in the Study's population have a reading level below the third grade. Many standardized tests purporting to measure other than reading ability still require the pupils to read the questions as well as the answer choices. To overcome the problems raised in achievement testing due to poor reading proficiency among CRMD pupils the Study took the following steps:

    a. Wherever possible, test items were presented in pictorial form, with the teacher providing oral directions for each item. Multiple choice picture items were used in most cases, while in other instances pictures were used to provide the setting for a less structured response on the part of the pupil. An example of a multiple choice picture item is: "Mark the boy who is being a good citizen." One of three different pictures offers the correct answer. An example of an item which uses pictures to provide the background for a question is: "Look at the ruler in the store windows. Rulers cost two cents each. Mark the number that shows how many rulers you can buy for ten cents." The picture for this item shows a stationary store window and its contents with the prices of various articles.

b. For children beyond the third grade of CRMD instruction, purely verbal test items are sometimes necessary due to the difficulty of reducing the subject matter content to pictorial form. This is particularly the case at the junior high level, where citizenship, budgeting, and occupational information are included in the curriculum. In many instances where purely verbal items were used by the Study to test knowledge in curriculum areas, the teacher orally presented questions that could be answered either yes or no by the pupils. Test questions were repeated if necessary. A test booklet was provided for all pupils so that those who could, silently read along while the teacher was reading the question aloud. The pupils then answered by marking "yes" or "no" to each question in their test booklets.

2. Many mentally retarded pupils may be expected to encounter difficulty in recording answers to standardized group tests because of their relatively poor ability to follow directions. In most standardized group tests, pupils must first locate the question among others on the same page, and then record an answer in a manner which may have to vary with different parts of the test.

To overcome difficulties in recording answers and in following directions, the Study included the following procedures in its achievement tests wherever possible:

wherever possible:

a. Test questions were presented only one to page; or in some cases, one block of several related questions to a page. This was intended to focus attention on the question being presented orally.

b. Separate answer sheets were avoided in all instances. The format for providing answer choices in the test booklets was kept as constant as possible.

c. The teachers' oral directions to the pupils reminded them repeatedly, throughout the tests, as to the correct method of recording their answers.

d. With only one or several items per page, teachers could rapidly inspect the pupils' booklets to make sure they were on the right page. Teachers were instructed to do this periodically throughout the test administrations. The fact that most test items were illustrated made it easier for teachers to check whether or not all pupils were on the proper page. In addition, where items were illustrated, the oral directions made reference to the content of the illustrations so that pupils could themselves check to see that they were on the right page.

3. An important and perhaps the most distinguishing characteristic of mentally retarded persons generally is a limited capacity for abstract thinking. Educational instruction for mentally retarded pupils usually centers around relatively concrete situations which they are apt to face in their daily lives. Most standardized tests of achievement beyond the primary level tend to center around situations that are beyond the experiences that mentally retarded pupils are likely to have had. In addition, the vocabulary used in presenting the test questions is often unnecessarily abstract or difficult. To avoid unnecessary abstractions in the testing of achievement, the Study used practical, everyday situations wherever possible as the vehicle for the presentation of problem situations. These were illustrated in most cases. Furthermore, the language used in presenting test items and oral directions was kept as simple as possible without appearing childish for the age level in question.

4. Although mentally retarded pupils are older than normal children of the same mental age, usually by several years, they are less handicapped in their social maturity than their mental age would seem to indicate. The content of standardized group tests for normal children is often considered somewhat childish by mentally retarded pupils of similar mental age. For example, illustrations in such tests may show pupils of primary age level, while the mentally retarded pupils at the same level of achievement may be in junior high school. To take account of the greater social maturity of mentally retarded pupils at a given level of achievement, the Study oriented the content of its tests toward situations likely to have been encountered by these pupils. Pre-adolescent, adolescent, or even adult figures were used to illustrate tests. Childish language was avoided where possible. Questions were often based on such situations as games for older children, employment, and travel.

Special Problems of Achievement Testing Under the Conditions of the Experiment

In addition to problems inherent in any attempt to measure achievement among the mentally retarded, the Study had to face problems arising from the composition of the special classes into which the Study's population was grouped. Some of these problems of class composition, such as the grouping together in one class of a fairly wide range of chronological age, have been common to classes of mentally retarded in New York City both before and after the onset of the experiment. This applies as well to the wide range of mental ages inherent in the control (non-reorganized) classes, where pupils from 50 to 75 I.Q. are grouped together. These differences in I.Q., when superimposed upon the differences in chronological age, meant an extremely wide range of mental age within single non-reorganized classes and a reduced, but nevertheless, considerable range of mental ages within reorganized classes.

The wide differences in mental age within classes were reflected in wide differences in achievement in such areas as reading, mathematical concepts, and general information. Under these circumstances, testing in several areas would ordinarily have required the teacher to use two or more test levels for each area.

Such testing for the Study would have placed a great burden upon the teacher, especially with the administration of both initial and final batteries of tests during the academic year. Measurement with different levels of the same test would have required an accurate teacher judgment of pupil achievement at the beginning of the year for the proper choice of test level for each pupil. It would also have created difficulties for the Study in the matching of pupils who had taken different tests at different levels during initial or final test sessions. The foregoing considerations led the Study to conclude that wide range tests of achievement, covering where possible the entire range of difficulty within one test booklet, were needed in each subject area.

The Study was faced with another measurement problem due to class composition which could be largely met through the use of wide range tests. The prescribed range of ages at the various levels of CRMD schooling differed for the two plans. For example, at the intermediate level, control classes had a chronological age range which fell above and below 13 years while reorganized classes were supposed to range from 11-0 through 12-11 years.[1] Thus, a child of almost 13 years of age would have been at about the mean age in a non-reorganized intermediate class, while an identical child in the reorganized plan might very well have been in an intermediate class with a mean age of 12. The mean ages of these classes served as an index to determine the yearly topic for core curriculum instruction, as was the practice in CRMD classes,[2] and if a different test level were used for each of the eight core levels, two otherwise matched intermediate level children in the two plans would have an excellent chance of being tested with two entirely different levels of the Core Achievement Tests thereby precluding adequate statistical comparisons.

To meet these problems of heterogeneity within classes, and of systematic differences in mental and chronological age across the experimental and control plans of instruction, the Study decided to use tests covering a wide range of achievement within a single test. Wide-range group tests were specially constructed by the Study in the areas of reading readiness, reading, mathematical concepts, and other subject content related to the CRMD curriculum. Each of the foregoing major subject areas was covered by one test, with the exception of the latter areas, where one test form covered the first four years of instruction and another, in two parts, the last four years.

The Review and Tryout of Standard Group Tests

In preparation for the initial testing program inaugurated in October 1957, a number of tests and other measures were selected for special study to determine their suitability as differentiating instruments under the special conditions imposed by the experiment. A discussion of this investigation follows in the sections below.

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[1] Class Designations in the Bureau CRMD, Board of Education of the City of New York, Bureau for Children with Retarded Mental Development. See p. 19 of this report.

[2] The curriculum of the Bureau CRMD is organized around eight major topics or cores. These are taught, in sequence, to correspond to the various age levels of the pupils.

Group Tests of Academic Achievement

During the first few months of the Study's existence (May and June, 1957) the Study tried out several standardized group tests of achievement. It was hoped that some of these might prove suitable, in their existing form or with revision, for the measurement of educational outcomes of the two plans. It was also expected that the tryout of these tests would give the Study's test constructors a clearer view of the test performance of pupils in New York City's special classes for mentally handicapped children.

As pointed out in the previous section, the Study finally decided to use wide range tests of achievement because of the wide ranges of ability within classes and for other reasons as well. In part, this decision was also based upon the tryout of tests described below. As a result of the tryout the Study also decided to use one of these tests, the New York Inventory of Mathematical Concepts, as the basis for a major revision or adaptation.

A tryout of the New York Inventory of Mathematical Concepts on a sample of four classes at the primary, intermediate and junior high school levels indicated that all five separate grade forms were generally too difficult.[1] Some confusion was evident among the pupils in the recording of their answers. The "difficulty" of the test seemed in part due to the format and method of administration which is more appropriate for use with populations of normal mental ability. The basic subject matter of the test however, was closely related to the CRMD curriculum.

In an effort to see if the history, geography, and science tests of the intermediate level of the Metropolitan Achievement Test[2] could be used profitably to test for growth among the more advanced junior high school pupils, the Study tested two high school classes for the mentally handicapped. These pupils were among the most able in New York City, as only a small percent of the mentally handicapped meet the qualifications for high school.[3] The results of the testing showed that the history, geography, and science sections of the Metropolitan Intermediate Battery were too difficult for CRMD high school classes, even when the testing time schedule was completely relaxed and when the teacher read most items aloud to the pupils.[4] A closer examination of the results indicated the first fifteen items of each test to be hard but usable for measurement. However, even these items were judged by the teachers to be not closely enough related to the CRMD curriculum.

The Stanford Achievement Test of Study Skills (Intermediate Form) also was tried out on a high school class and found to be too difficult for effective testing. In addition, the testing time was excessive, and the subject matter was in large part unfamiliar to the students.

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[1] The grade one form was found of appropriate difficulty for a class with an age range from approximately seven and one-half to eleven years.

[2] Intermediate Battery, Form V.

[3] A minimum reading grade of 3.5 is required.

[4] The tests of the Metropolitan Achievement Test in question are normally self-administered.

Group Test of Motor Skill in Handwriting

With the thought that skill in handwriting might be sensitive to differences in gains in instruction between the one-track and two-track plans, the Study administered an adaptation of the Metropolitan Primary Cursive Handwriting Scale as a group test. The test called for the writing of a simple poem from a sample script with which each pupil was provided. The results of the testing showed a surprisingly good performance among the mentally retarded children in the several classes tested. Even children at the primary level did fairly well, to the point where the grading of the samples of handwriting showed only a narrow range of scores. For this reason and other reasons the handwriting test was abandoned by the Study.

The Review and Tryout of Measures of Personality and Adjustment

One of the objectives of the Study was to compare the outcomes of the two plans for personal and social adjustment of the pupils. In preparation for this, the Study tried out three ratings scales to be completed by teachers, and one group test of personality. The rating scales included the New York Child Development Scale, The New York Rating Scale for School Habits, and the Haggerty-Olson-Wickman Behavior Rating Schedules.

Each rating scale was completed by seven selected teachers for each pupil in their classes. The teachers were asked to review the rating scales critically, as well as rate their pupils. The teachers' reviews indicated that none of the three rating scales was usable for mentally retarded children without considerable revision, with the possible exception of the language scale of the New York Child Development Scale.

The Haggerty-Olson-Wickman Behavior Rating Schedules included items for rating which were so broadly stated that the mentally retarded children rated, tended to fall within the first two of the five available categories. In addition, the rating schedules were not sufficiently oriented toward school activities, either individual or group.

Comments by the teachers of mentally retarded who tried the New York Child Development Scales included the following points: the scales should cover more concrete items, such as ability to travel and purchase; many items on the scales were misplaced for retardates;[1] and the scales contained too few items at the upper levels.[2] The language scale alone seemed to have some possibilities for use with the Study's retardated population.

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[1] For example, "Can go to school without an adult if there are no dangerous crossings" appears at age six, together with "Finds in the classroom or at home pictures appropriate to the class topic of study........"

[2] The Scales range through age eight for normal children with the items grouped according to stated age levels.

Teacher comments on the New York Rating Scale for School Habits indicated that many items such as "ambition" and "honesty" were hard to rate while other items seemed inappropriate for retardates.[1] Much of the usable information provided by the Scale appeared on the pupil cumulative record forms in general use in the New York City schools.

The California Test of Personality, Primary Form A, was administered as a group test to three CRMD classes. The age range in the class of youngest pupils was from approximately eleven to fifteen years; the age range for the class with the oldest pupils was from fourteen and one-half to seventeen years. In two of the classes pupils of from 50-75 I.Q. were represented, while in the third the I.Q. range approximated that of a high educable class under the reorganized plan (60-75). The test was found to be inappropriate for the Study's population for the following reasons:

1. Low correlations were found between scores on the California Test of Personality and teachers' rankings of adjustment.[2]
2. The test was confusing to many pupils, even though the questions were read aloud by the teachers. The administration time went considerably beyond the usual 45 minutes;[3] too many answers were omitted; and some of the language, although fairly simple, was misunderstood.
3. A number of children were overly concerned about who would see their test papers.
4. Some children were disturbed by the nature of the test questions.

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[1] For example, willingness "to continue his education."

[2] Correlations between the self-adjustment sub-scores and teachers' rankings of their pupils on self-adjustment were between .11 and .19 for the three classes. Correlations between the social adjustment sub-scores and teachers' rankings of social adjustment were -.35, .30, and .64.

[3] The test has 96 questions.

Measures Used in Evaluation

The tests and measures actually employed for the evaluation of the two plans are described below. These instruments and techniques have been, with one or two exceptions, developed by the Study during the initial phases of the experiment.

Group Tests of Academic Achievement

The Metropolitan Achievement Test and
The New York Reading Readiness Test

The Metropolitan Achievement Test has been used regularly by the Bureau for Children with Retarded Mental Development for the measurement of reading and arithmetic skills. Since the Study's specially constructed tests of academic achievement were not ready at the beginning of the first school year of the experiment, it was decided to utilize scores from the Bureau's city-wide fall administration of the Metropolitan Test. The latter test was given again at the end of the school year in order to measure growth. Since the Metropolitan Test was utilized also during the second school year, the experiment possessed a continuing common measure in the evaluation of pupil progress under the two plans for the two year period. The New York Reading Readiness Test was also used by the Bureau CRMD prior to the experiment, and the Study continued its use during the experiment for similar reasons, with final testing added at the end of each school year.

The levels of the Metropolitan Test used were the Primary I, Primary II, and Elementary. The intermediate level was also administered to some pupils, but too few cases were obtained to warrant an adequate statistical comparison of the two plans on the basis of these scores.

The Metropolitan scores used in the analysis were the average reading scores, and the scores on the separate arithmetic subtests. The average reading scores were arrived at from the reading subtests in the standard manner provided in the test manual. The total score on the New York Reading Readiness Test was used. The latter test consisted of two subtests; one on word concepts and the other on word matching.

The Wide Range Test of Reading Achievement

The Wide Range Test of Reading Achievement provides one total score for the measurement of reading skills through the fifth grade level. The reading skills measured by the test are word recognition, word meaning, sentence comprehension, and paragraph comprehension. The latter included the comprehension of advanced sentence structure. The test was constructed by the Study during the 1957-1958 school year to meet the general problems of measurement of mentally retarded pupils, and the special problems of measurement under the conditions of the experiment.

Script lettering was used through most of the test, as this was the form of lettering predominantly used in the instructional materials for these children. The paragraph items were set in regular type, as it was decided that proficiency at the fourth and fifth grade levels should include familiarity with the form of type commonly used in newspapers and magazines.

The Wide Range Test of Reading Achievement contains a total of 46 pages, with one or two related questions per page. Some of the questions involve the selection of two or three right answers from among a group of possible choices, and for this reason the total possible score is 123, with one point gained for each correct response. The average probability of guessing an answer through chance alone is approximately one in three. Reliability coefficients, tentative norms and related data on this and all other Study-developed tests are given in Appendix A.

The Extended Range Test of Readiness for Reading

The Extended Range Test of Readiness for Reading was designed by the Study primarily to make possible the measurement of growth. For this reason it includes the items through the end of the first grade from the Wide Range Test of Reading Achievement. It was intended that all pupils tested at the beginning of the school year at the readiness level would be retested at the close of the year with the Extended Range Test, so that before-and-after measures with the same test would be available.

The reading readiness portion of the test measures knowledge of concepts concerning position and size, and the ability to discriminate printed words identical to samples provided in the test booklets. Script lettering is the only form of lettering used in the test.

The Extended Range Test of Readiness for Reading contained a total of 30 pages, with a maximum possible score of 50. The average probability of guessing a single answer is one out of five. The test was used at the beginning and end of the 1958-1959 school year.

The Wide Range Test of Mathematical Concepts

This test primarily measures an understanding of mathematical concepts, and the application of these to simple, structured problem situations. Some of the problems require computation, but this aspect of the test is not emphasized. The curriculum for CRMD classes was followed rather closely, particularly those of its aspects which concerned mathematical concepts rather than computational skills. Many of the items in the test were adapted from the New York Inventory of Mathematical Concepts,[1] which was tried out by the Study previous to the construction of the Wide Range Test of Mathematical Concepts. Approximately three-quarters of the test items may be described as falling under the meaning of mathematical terms and symbols, problems of purchase and the value of money, and telling time, both by the clock and the calendar. The remainder of the items deal primarily with miscellaneous practical problems.

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[1] A publication of the Bureau of Educational Research, Board of Education, New York City.

The Wide Range Test of Mathematical Concepts contains a total of 35 pages, with a maximum possible score of 35. The average probability of guessing a single answer is approximately one in five. The two forms of the test were constructed, one for use at the beginning of the 1958-1959 school year, and the other for use at the end.

The New York City Core Achievement Test

The New York City Core Achievement Test, in its three separate test booklets, covers eight years of instruction under the CRMD curriculum in areas other than reading and mathematics. Instruction for educable retardates in New York City centers around eight one-year units of instruction called cores. The core topics include the home, the neighborhood, the larger community, occupational information and choice, budgeting, and citizenship. The New York City Core Achievement Test was designed to reflect the content of the course of study at each of the various core levels. To insure its curricular validity it was reviewed by teachers and supervisors of the Bureau CRMD prior to its revision before use in the experiment.

The Primary Core Series is contained in one test booklet which covers the first four years of instruction. Most of its fifty test questions may be classified under health, safety and personal care, knowledge concerning the home and neighborhood, travel in the larger community, and practical purchasing. In addition, some of the questions deal with citizenship, and with the functions of occupations - areas which are covered more extensively in the Advanced Core Series. The test booklet consists almost entirely of illustrated three-choice items.

The Advanced Core Series covers the second four years of instruction in CRMD classes. It consists of two separate booklets to be used in combination — Part I, which is made up primarily of fifty illustrated three-choice items; and Part II, which contains sixty completely verbal "yes-no" questions which are read to the pupils. Those who can follow the test in their booklets, read along with the examiner. The content of both forms combined may be subsumed under the topics of choosing and getting a job, a more technical occupational knowledge concerning tools and equipment, health and safety, budgeting, and citizenship.

The New York City Core Achievement Tests were used only in the 1958-1959 evaluation.[1]

Measures of Manual Skills and Motor Coordination

Ratings of Change in Gross Motor Coordination and Eye-Hand Coordination

At the close of the 1957-1958 school year, each pupil in the experiment was rated by his teacher for growth in gross motor coordination, and for growth in eye-hand coordination. The following rating scale was used to indicate changes in each of the two areas during the school year:

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[1] Appendix B contains sample pages of several of the Study-developed tests.

1. considerably poorer
2. slightly poorer
3. no change
4. slightly improved
5. considerably improved

Ratings of General Motor Coordination

During the 1958-1959 school year, the Study was able to obtain both initial and final ratings of general motor coordination on all pupils in the experiment. Teachers were asked to rate, "keeping in mind the general motor coordination of the average child of that particular chronological age." The following rating categories were provided—very poor, poor, average for chronological age, good, very good.

In addition to the foregoing measures of motor coordination on large samples of pupils, the following measures were used for before-and-after scores on limited samples during the 1958-1959 school year:

A Study-Constructed Form Board Test

This individually administered test involves the placement of one inch diameter discs in holes on a board 12 by 12 inches. Five separate tasks test eye-hand coordination for the use of right and left hands separately, alternately, and simultaneously.[1]

The New York Structured Pattern Cutting Test

This test was individually administered to the same limited sample as was tested with the form board test described immediately above. The skill measured by the pattern cutting test differs from that measured by the form-board mainly in that finer and more accurate control of the fingers and hands is required. The test consists of cutting with a scissors along an irregular pattern of increasing difficulty.[2]

Measures of Speech

Teachers' Ratings of Growth in Intelligibility and Spontaneity of Speech

All pupils in the experiment were rated by their teachers, at the close of the 1957-1958 school year, for growth in intelligibility and spontaneity of speech. A five point rating scale which included the following categories was used:

1. considerably poorer

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[1] Instructions for this test are in Appendix C.

[2] A copy of this pattern as well as a Quality-Time Scale used in scoring pupil products of this test are in Appendix D.

2. slightly poorer
3. no change
4. slightly improved
5. considerably improved

Psychologists' Ratings of Oral Communication

During the 1958-1959 school year, before-and-after psychologists' ratings of oral communication were obtained on a limited sample. The ratings were based upon individual pupil's oral communication during an interview which covered his responses concerning his interests, activities, class satisfaction, and vocational aspirations. Oral communication was rated on a five-point scale in the areas of-clarity of response, spontaneity of response, relevance of response, and comprehension of questions. In addition, the psychologists noted whether the pupils demonstrated any noticeable speech defects, and these were described where present.[1]

Measures of Personal and Social Adjustment

Teachers' Ratings of Change in Social Maturity and Emotional Stability

Growth in social maturity and emotional stability was rated by teachers at the close of the 1957-1958 school year for all pupils in the experiment. Ratings of growth were made on the following scale:

1. considerably poorer
2. slightly poorer
3. no change
4. slightly improved
5. considerably improved

The Pupil Behavior Checklist

This twenty-item inventory was completed by the teachers for all pupils in the experiment toward the beginning and end of the 1958-1959 school year. The Pupil Behavior Checklist measures adjustment as evidenced in school behavior, and covers personal and social adjustment, acceptance of school rules and personnel, and application to school tasks. The checklist centers attention on the characteristics present or absent in the individual child, without calling for direct comparisons with "average" normal or "average" CRMD children.

The twenty items finally selected for the Pupil Behavior Checklist were selected from an initial list of 233 items. In one of the first steps in the development of the checklist a group of 18 school psychologists rated each item for its relevance to adjustment in a number of areas. Eighty-one items deemed relevant by the psychologists to good adjustment were then presented to eleven teachers for tryout on each member of their classes. Finally, an item analysis was performed on the tryout checklists, and twenty items were selected that correlated well with total score, and that withstood a close final review for suitability and comprehensiveness of content.[1]

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[1] A copy of the psychologist's interview form appears in Appendix E.

Measures of Pupil Attitudes, Activities, and Interests

Teachers' Ratings of Growth in Two School Areas

At the close of the 1957-1958 school year all pupils in the experiment were rated by their teachers for growth in two areas related to attitude toward school and school activities. Ratings on a five point scale were made separately for improvement in school work habits and willingness to learn.

The Pupil Interview Schedule

The Schedule was used by Study psychologists on a sample of approximately 30 classes toward the beginning and end of the 1958-1959 school year. The relatively structured interview covered interests and activities, vocational aspirations, and school attitudes.

Measures of Peer Acceptance

Teachers' Listings of Liked and Disliked Children

Toward the close of the 1957-1958 school year, each teacher in the experiment listed the names of children who were "liked or accepted by almost everyone else in class;" and the names of those who were "disliked or rejected by almost everyone else in class." Class scores were obtained for a comparison of the two plans.

Peer Acceptance Measured Through Pupil Interviews

As indicated above, during the 1958-1959 school year Study psychologists interviewed pupils in a sample of 30 experimental and control classes. During the interview, each pupil was asked to name all pupils he liked and disliked in his class. The pupil data for each class were combined to provide a class measure of peer acceptance.

Measures to Assess the Reactions of Teachers and School Administrators

The Teacher Questionnaire on Reorganized and Non-Reorganized CRMD Plans

During both years of the experiment this printed questionnaire was sent to teachers of reorganized classes since only these teachers had experience teaching under both plans. The purpose of the questionnaire was to assess teacher reaction to the two plans, with regard to such things as pupil growth, teaching practices, and teacher satisfaction. Part I of the Teacher Questionnaire included specific questions, while Part II asked the teachers to provide written statements of the advantages and disadvantages of each of the two plans of instruction.

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[1] A copy of the Pupil Behavior Checklist appears in Appendix F.

The Supervisor Questionnaire on Reorganized and Non-Reorganized CRMD Plans

The Supervisor Questionnaire was similar in form to the Teacher Questionnaire just described. It also was administered during both years of the experiment.

The Principal Questionnaire on Reorganized and Non-Reorganized CRMD Plans

During the 1957-1958 school year, all principals of schools with experimental and control classes were asked to complete the questionnaire. The questionnaire covered areas such as teacher turnover, referrals of pupils to the attendance bureau, and the need for special facilities.

Measures to Assess the Reactions of Parents

The Parent Questionnaire

During the 1958-1959 school year a questionnaire was circulated to a large sample of parents of pupils in the experiment. Both experimental and control classes were included. The questionnaire covered parents' opinions of their children's progress in school work, social adjustment, and attitude toward school among others. A copy of this questionnaire is in Appendix G.

Parent Interviews

At the time the Parent Questionnaires were circulated, Study psychologists conducted personal interviews of a sample of parents. During the personal interviews the same questions were asked as appeared on the Parent Questionnaire. In addition, the psychologists rated parents' acceptance of their children's limitations, and parents' attitudes toward the CRMD program.

Measures of Occupational Adjustment

Student Questionnaire on Employment Status

During the 1958-1959 school year, questionnaires were mailed to a sample of former pupils from participating experimental and control junior high school CRMD classes. The purpose of the questionnaire was to compare the effectiveness of the two-track and one-track plans in preparing educable mentally retarded children to make successful occupational adjustments in the community. The questionnaire consisted of open-end questions covering the subject's current employment status, previous work history, facilities utilized in obtaining the position, job satisfaction, opinion as to the effectiveness of his school in preparing him for his current position, and plans for future training. An additional section was included for those currently unemployed. Questions in this section concerned the duration of the unemployment, the type of work being sought, if any, and the form of assistance used in seeking employment. (See Appendix H.)

Employer Checklist of Worker Characteristics

A checklist was mailed during the 1958-1959 school year to the employers of all those former students who reported that they were employed. The items in the checklist concerned the employee's attendance and adequacy in the work situation, and were phrased so as not to disclose that the employee had been in a class for the mentally retarded. (See Appendix I.)

Other Measures Used in Evaluation

Teachers' Ratings of Growth in Health Habits

During the 1957-1958 school year teachers' ratings of growth in health habits were obtained for all pupils in the experiment. A five-point scale was used for rating growth in this area.

Summary

Early in the experiment the Study found through review and tryout, that it had to provide specially constructed measures for mental retardates in areas that included academic achievement, personal and social adjustment and school habits. For this reason it devoted considerable effort to constructing special measures which were used in the evaluation of the two plans of instruction. The instruments used in the evaluation of the overall effects of the two-track and one-track plans included standardized group tests of reading readiness and reading, as well as Study-developed tests in these two areas plus mathematical concepts and core content.

Teachers' ratings were used to measure general motor coordination, speech, personal and social adjustment, pupil attitudes, activities, and interests, and attendance and punctuality. All teachers also completed a checklist concerning the behavior of their pupils. All teachers of experimental classes completed a questionnaire concerning the relative merits of the reorganized and non-reorganized plans. A measure of peer acceptance within classes was also provided by teachers. Health habits were also rated.

Field supervisors of teachers, as well as principals, contributed data for an evaluation of the two plans of instruction from the administrator's viewpoint.

Study psychologists administered individual tests of motor coordination, interviewed pupils concerning interests, activities, school attitudes, vocational aspirations and peer acceptance, and rated the pupils on the basis of oral communication, and comprehension.

Former pupils from the experimental and control plans completed questionnaires relevant to their occupational adjustment. They were also interviewed by Study psychologists.

A group of parents of pupils in selected classes were interviewed by Study psychologists concerning their opinion of their children's progress in school. All remaining parents were sent mailed questionnaires asking the same questions. The latter were completed and returned anonymously.

CHAPTER V

THE 1957-1958 EVALUATION

General Description of the Overall Design

The major purpose of the Study was to compare differences in educational outcomes under the one-track and two-track plans of instruction. The educational outcomes were comprehensive and included academic achievement, personal and social adjustment, attitudes and interests, manual skills, and preparation for an occupational adjustment in the community. Class cohesiveness, class climate, and class-school relations were also included.

Data were gathered from a variety of sources for a comparison of the two plans of instruction in the various areas mentioned above. Pupils were measured directly through group tests, individual performance tests and personal interviews conducted by psychologists. Teachers provided data on the status and progress of individual pupils through the completion of checklists and rating forms, and rendered judgments on the relative merits of the two plans of instruction. Parents gave opinions on their children's progress through mailed questionnaires and in personal interviews by psychologists. Employers provided information on occupational adjustment of former CRMD pupils through written checklists, and questionnaires.

Although there are many points of similarity, the experimental design for the 1957-1958 evaluation was different from that for the 1958-1959 evaluation. A tryout of available tests and measures just prior to the beginning of the first school year indicated a paucity of measures suitable for mentally retarded pupils. Not enough time was available in the period just prior to the beginning of the first school year to allow for the development of the tests and measures required. For this reason, various substitute techniques were employed during the first year to answer certain of the questions under investigation; the pursuit of answers to problems in other areas was delayed until the second year.

However, one instrument used for the measurement of large samples of pupils during both years was the Metropolitan Achievement Test, Arithmetic and Reading Sections. Initial and final scores on this test were obtained for school years 1957-1959 and 1958-1959, providing data on pupil growth for both years of the experiment.

The Selection of the Total Sample Assigned to the Study

The sample of classes selected by the Bureau CRMD for inclusion in the experiment was chosen in blocks of classes and assigned to the two plans of class organization and instruction. Most blocks consisted of all CRMD classes within the geographical and jurisdictional area under one of the New York City's assistant superintendents of schools. In some cases, only a part of a district was assigned to one or the other plan. Nineteen districts were assigned to the experimental plan, and seventeen to the control.

The number of classes within individual districts or parts of districts assigned to the Study ranged from a maximum of 35 to a minimum of 3 or 4. Most of the Study's sample of classes were assigned in blocks of twenty or more classes within single districts. The Director and Assistant Directors of the Bureau CRMD, selected districts matched approximately for their socioeconomic status, and represented a cross-section of the many socio-economic levels throughout the city.

The total number of pupils made available by the Bureau CRMD for the Study's sample amounted to over 3,600 pupils, almost one-third of the total New York City population in special classes for mentally retarded between 50 and 75 I.Q. This sample size was considered by the Study as a pool from which it could draw representative samples for its many, varied analyses. In some instances, all pupils participated in a mass testing program, and large samples for analysis were drawn later. In other instances, for example where interviews were used, the sample was selected prior to testing.

Population Data

During the first week of the school year 1957-1958, the Bureau for Children with Retarded Mental Development made available 162 reorganized classes for experimental purposes. Along with these, 139 non-reorganized classes were provided as controls. During the month of October 1957, forms which provided personal data and background information on each pupil were filled out by all the teachers involved in the experiment. The statistical data presented in this section are based primarily on information obtained from these record forms.

Selection of Classes for Study

In the early stages of the experiment it was found that not all the reorganized classes originally intended for study were homogeneous with regard to the educability levels of their students. In other words, not all pupils assigned to a high educable class were Educable I-type pupils; and not all the pupils assigned to a low educable class were Educable II-type pupils. Similarly, not all of the non-reorganized classes were heterogeneous with respect to educability. This became apparent during informal interviews with teachers in the field.

During the spring of 1958, in order to determine which reorganized classes were homogeneous and which non-reorganized classes were heterogeneous, the Study circulated an omnibus questionnaire to every teacher having classes in the experiment. Section C of this questionnaire asked the teacher to rate each of her pupils as to the type of class placement which she, on the basis of her knowledge of the child, felt most appropriate.

The following types of class placement for each pupil were possible:

A. "Opportunity" or "Slow Regular" class
B. Class for "High Educable" retardates

C. Class for educable retardates
D. Class for trainables (low I.Q.)
E. Corrective, disciplinary institution
F. Custodial institution
G. Other placement to be specified by teacher.[1]

Pupils who received "A" ratings were considered to be the most educable of the retardates since their teachers felt that they belonged in "Slow Regular" classes. It must be pointed out, however, that although the teachers of these pupils felt they could cope with a more advanced educational program, other (legal) requirements indicated their suitability for inclusion in a class for mental retardates.

Teachers assigned ratings of "B" to pupils who they felt could profit more by being in a class for "High Educable" retardates. Both the "A" and "B" categories were combined to form the high educable group for purposes of this study.

"C" was the category employed by the teachers to denote low educable retardates. Since it was the opinion of the teachers that pupils who rated "D" belonged in classes for trainables, they were clearly among the lowest on a continuum of educability. Thus, the "C" and "D" categories were combined to form the "Low Educable" group.

All the "E", "F", and "G" rated pupils were combined into a category which was designated "Other". The ratings of "E", "F", and "G" cast some doubt as to where pupils so rated would fall on a continuum of educability. It was assumed that these pupils were neither high nor low educables, and were therefore excluded from intensive evaluation. The experiment involved the use of the most homogeneous experimental high and low educable classes and the most heterogeneous control classes, to heighten any possible effects of the reorganization.

The next problem to be solved was the determination of sufficiently homogeneous experimental classes and sufficiently heterogeneous control classes. Conferences with personnel of the Bureau for Children with Retarded Mental Development led to the a priori decision that reorganized classes that had either eighty percent or more high educable pupils, or eighty percent or more low educable pupils were to be considered homogeneous classes. Non-reorganized classes that contained between seventy and thirty percent of either high educables or low educables were to be considered heterogeneous classes. The following are samples of homogeneous high educables classes, homogeneous low educables classes, and heterogeneous classes:

Homogeneous Ed I (Exp)	Homogeneous Ed II (Exp)
85% High Educable	5% High Educable
15% Low Educable	81% Low Educable
0% rated E, F, or G	14% rated E, F, or G

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1. See Appendix J for a copy of this questionnaire.

Heterogeneous (Con)	Heterogeneous (Con)
60% High Educable	23% High Educable
15% Low Educable	69% Low Educable
25% rated E, F, or G	8% rated E, F, or G

Recognizing the fact that not all classes originally assigned as either experimental or control classes would meet these criteria imposed by the Study, an inventory was taken to determine the number of classes that would be acceptable and the number that would not. Table IV presents these data.

TABLE IV

Number of Bureau Designated and Study Designated Experimental and Control Classes for Each Class Level

Class Level	Bureau Designated Classes	Study Designated Classes		Incomplete Data
		Homogeneous	Heterogeneous	
Exp Ed I				
Primary	29	16	7	6
Intermediate	37	19	13	5
Junior High	41	22	15	4
Total	107	57	35	15
Exp Ed II				
Primary	15	7	6	2
Intermediate	13	6	6	1
Junior High	15	7	7	1
Total	43	20	19	4
Control				
Young	32	10	20	2
Intermediate	21	10	9	2
Older	57	20	32	5
Wide Age Range	21	12	9	0
Total	131	52	70	9

Note: Also assigned as part of the 301 classes of the Study were 12 experimental and 8 control vestibule classes. Children are assigned to vestibule classes usually because their levels of educability have not as yet been determined.

As indicated in Table IV, of 107 classes originally set up as experimental high educable, 57 were considered homogeneous and therefore retained for study; of 43 classes originally set up as experimental low educable, 20 were considered homogeneous; and 70 of the 131 control classes were considered heterogeneous.

Causes of Attrition in the 1957-1958 Sample Population

Of the 3,627 pupils assigned to the experimental and control populations in October, 1957, almost two-thirds were lost to the experiment during the first year of evaluation. These losses were caused partially by the considerable amount of pupil turnover during the year due to transfers, drop-outs, illnesses and the like.[1] The extent to which these causes reduced the original sample size can be seen in the following set of figures:

Date	Boys		Girls		Total
	Exp	Con	Exp	Con	
October 1957	1331	786	826	684	3627
June 1958	862	676	537	362	2437
Loss	469	110	289	322	1190

The above figures indicate that 32.80% of the original sample was lost to the study due to pupil turnover. A further loss of cases was sustained by reason of the fact that approximately half of the assigned classes did not meet certain criteria which was set up to establish a pool of the most homogeneous experimental classes and the most heterogeneous control classes. Other cases were lost due to incompleteness of critical data. The latter losses were caused by absence at the time of initial or final testing, inability or reluctance on the part of some teachers to give educability ratings to new members of their classes, and to a large extent by losses in the mails—many packages were received broken with the result that test booklets and other data were lost.

The figures below show the number of pupils remaining in the classes which were finally accepted as experimental or control classes, as well as the number of pupils for whom complete data were obtained.

	Boys		Girls		Total
	Exp	Con	Exp	Con	
In accepted classes	494	372	315	355	1536
Complete data	293	236	220	263	1012

The cases lost due to classes that did not meet the criteria for acceptance accounts for 57.65% of the original sample. Another 14.45% was lost due to incomplete data. This last percentage also includes those cases of "incorrect" placement of pupils such as Educable I pupils in Educable II classes, or the reverse - Educable II in Educable I classes, as well as those pupils who could not be classified.

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[1] Appendix K shows a detailed break-down of the amount of turnover for the school year 1957-1958.

The final sample remaining for study for the 1957-1958 evaluation comprised 27.90% of the original assigned population.

Selected Characteristics of Classes Chosen for Study

In this section will be presented certain characteristics describing, in general, the experimental and control populations in terms of age, intelligence quotients, and teachers' ratings of social maturity, emotional stability and motor coordination.

Reference to the following table will give the reader an overall picture of the mean ages of pupils rated by teachers as high educable, low educable and "other" in the entire sample of homogeneous experimental and heterogeneous control classes. Data on all the pupils in each type of class are presented. In Ed I classes, for example, data concerning Ed II pupils and those designated as "other" are shown because these pupils contributed to the general make-up of that type of class.

TABLE V

Means, Standard Deviations, and Ranges of Chronological Age in Months of Pupils in Homogeneous Experimental and Heterogeneous Control Classes by Type of Class, Educability Level, and Sex as of October 1, 1957

Type of Class	Ed Level	Boys				Girls			
		N	M	σ	Range	N	M	σ	Range
Ed I (Exp)	I*	319	148.07	25.24	82-221	222	147.27	23.95	93-203
	II	22	148.09	26.21	96-194	13	138.08	35.28	86-181
	Other	18	154.00	25.98	102-190	5	128.40	24.15	102-124
Ed II (Exp)	I	6	136.00	20.25	113-148	9	161.89	14.62	156-176
	II*	123	155.03	26.01	96-202	64	145.41	26.56	81-193
	Other	6	138.83	37.92	109-160	2	132.00	12.00	120-144
Control	I*	189	155.58	25.23	106-203	216	154.34	23.86	96-196
	II*	161	152.35	25.61	93-208	135	150.31	32.49	86-199
	Other	30	165.97	26.27	113-203	11	165.12	27.03	116-202

*See text below

The means that are of chief interest in Table V are those of high educable pupils in Ed I classes, low educable pupils in Ed II classes, and the corresponding means of high and low educable pupils in the control classes. These means appear in rows marked with asterisks in the above table. Most of the analyses to be presented involved a comparison of Ed I pupils in experimental Ed I classes with Ed I pupils in control classes.

Similarly, Ed II pupils in experimental Ed II classes were compared with Ed II pupils in control classes.

The high educable boys in the experimental Ed I classes were approximately seven months younger than the same category of boys within the control classes, while the low educable boys in the control plan were approximately three months younger than their counterparts in the experimental Ed II classes. The differences in mean ages for the high educable girls in the two plans is not substantially different than that for the Ed I boys. However, the experimental Ed II girls are about 5 months younger than their control counterparts. These figures are presented here for descriptive purposes. Selected pupil samples were drawn for the various comparisons of growth.

The few pupils on which agreement on class placement was not obtained between teacher's and bureau classifications can readily be seen in Table V. The Ed II and "other" pupils reported to be in Ed I experimental classes represented 10% of the total number in such classes. About 11% of the total number of pupils in the Ed II experimental classes were made up of Ed I and "other" pupils. About 5 1/2% of the control pupils are reported as belonging in a type of class other than the ones they are in. Since the selection of these heterogeneous control classes required that both Ed I and Ed II pupils be included, only those categorized as "other" account for this small percentage.

TABLE VI

Means, Standard Deviations, and Ranges of Intelligence Quotients of Pupils in Homogeneous Experimental and Heterogeneous Control Classes by Type of Class, Educability Level, and Sex

Type of Class	Level	Boys				Girls			
		N	M	σ	Range	N	M	σ	Range
Ed I (Exp)	I*	312	68.62	5.54	50-75	217	67.04	6.06	50-75
	II	20	66.80	7.37	50-75	12	66.58	6.52	53-75
	Other	15	68.40	7.19	50-75	5	65.20	3.66	69-75
Ed II (Exp)	I	6	63.87	4.30	56-70	9	60.67	6.26	50-68
	II*	118	60.74	7.51	50-75	61	56.80	6.78	50-73
	Other	4	59.25	9.58	50-72	2	59.50	1.50	58-61
Control	I*	186	67.89	6.03	50-75	213	66.84	6.20	50-75
	II*	156	63.04	7.26	50-75	131	60.44	7.97	50-75
	Other	30	64.60	7.14	50-75	11	63.27	7.58	50-75

*See text below

As in the previous table the groups of prime interest have been marked with asterisks. It can be noted in Table VI that, of the groups which have been so marked, the Ed I pupils have mean I.Q.'s between 66.84 and 68.62, and the Ed II pupils have mean I.Q.'s between 56.80 and 63.04. This shows the strong tendency for Ed I pupils to obtain higher scores on the Stanford-Binet as compared to low educables. However, the relationship between I.Q. scores and teachers' ratings of educability is far from perfect. Coefficients of correlation to be presented later in the report show these two variables to have only a moderate relationship.

With reference to the unstarred rows in Table VI, it is interesting to note that the Ed II and "other" pupils in Ed I classes have mean I.Q.'s very similar to the mean of the Ed I pupils. Also, the Ed I and "other" pupils in Ed II classes have mean I.Q.'s approximating the mean of the Ed II pupils in these classes. The most probable explanation for this similarity is the fact that the I.Q. played an important role in the original placement of retardates into high and low educable classes at the beginning of the reorganization. In an earlier chapter of this report, as part of a section concerned with the characteristics of mental retardates, it was pointed out that high educable pupils generally have I.Q.'s from 60 to 75, and low educable pupils generally from 50 to 59. It would appear from the data in Table VI that the teachers departed somewhat from these suggested guide lines when they assigned individual educability ratings for purposes of this study. This is evidenced by the fact that both the high and low educable pupils have I.Q.'s covering the same range - namely, 50 to 75.

Emotional Stability

In the normal process of evaluating mentally retarded children in the New York City schools, teachers rate the emotional stability of each child at the beginning of the school year on the following five point scale.

1	2	3	4	5
Poor	Fair	Average Good	Very Good	Excellent

These ratings are usually entered on the child's permanent record each year. The utilization of these ratings gives a more complete description of the population under study. These data are presented in Table VII.

TABLE VII

Means, Standard Deviations, and Ranges of Teachers' Ratings of Emotional Stability of Pupils in Homogeneous Experimental and Heterogeneous Control Classes by Type of Class, Educability Level, and Sex as of October 1, 1957

Type of Class	Ed Level	Boys				Girls			
		N	M	σ	Range	N	M	σ	Range
Ed I (Exp)	I*	312	2.82	.98	1-5	205	3.05	1.01	1-5
	II	22	2.55	1.11	1-5	10	2.50	.67	2-4
	Other	18	2.33	1.01	1-5	2	2.50	.50	2-3
Ed II (Exp)	I	6	2.50	.76	2-4	9	3.22	1.23	1-5
	II*	120	2.37	.93	1-5	65	2.12	.93	1-5
	Other	5	1.40	.80	1-3	2	1.50	.50	1-2
Control	I*	180	3.13	1.03	1-5	209	3.42	1.01	1-5
	II*	160	2.46	1.05	1-5	121	2.62	1.12	1-5
	Other	31	2.32	1.15	1-5	11	2.73	1.05	1-4

*Denotes groups from which samples were drawn for comparisons

It is again pointed out that no statistical test is called for in the comparison of these groups. The rows marked with an asterisk are the ones of chief interest. A cursory reference to the above table will reveal that within the experimental and control groups the Ed I pupils obtained the higher mean ratings. In all but one instance the mean ratings of those designated as "other" approximated or fell below the means of the low educables.

Social Maturity

Using the same five point scale described in the previous section the teachers also rate the social maturity of their pupils as part of the routine evaluative process. As with the ratings of emotional stability, ratings of social maturity were obtained in October, 1957 on all the pupils under study. Table VIII presents the data on ratings of social maturity.

TABLE VIII

Means, Standard Deviations and Ranges of Teachers' Rating of Social Maturity of Pupils in Homogeneous Experimental and Heterogeneous Control Classes by Type of Class, Educability Level, and Sex as of October 1, 1957

Type of Class	Ed Level	Boys				Girls			
		N	M	σ	Range	N	M	σ	Range
Ed I (Exp)	I*	313	2.87	1.01	1-5	205	3.05	1.03	1-5
	II	22	2.55	1.11	1-5	10	2.30	.46	2-3
	Other	18	2.33	.89	1-5	2	2.50	.50	2-3
Ed II (Exp)	I	6	3.50	.50	3-4	9	3.11	1.29	1-5
	II*	121	2.33	.96	1-5	65	2.00	.98	1-5
	Other	5	1.40	.49	1-2	2	1.00	0.00	1-1
Control	I*	180	3.21	.97	1-5	209	3.51	1.00	1-5
	II*	160	2.38	1.00	1-5	121	2.60	1.10	1-5
	Other	31	2.39	1.15	1-5	11	2.64	1.29	1-5

*Denotes groups from which samples were drawn for comparisons

As with the previous comparison of ratings, the data in Table VIII show that the high educable experimental pupils and high educable control pupils received higher mean ratings than the low educable pupils in each group. The mean ratings of those pupils designated as "other" tend to approximate or fall below the mean ratings of the low educables.

Motor Coordination

Inasmuch as no tests or other measures of motor coordination suitable for the purposes of this study were found in the early phases of the experiment, and since none of the Study-developed tests were ready for use at the beginning of the first school year, teachers' ratings in this area were obtained on all pupils in both groups. The following five point scale was used:

1	2	3	4	5
Very Poor	Poor	Average for C.A.	Good	Very Good

The point of reference in this rating scale is the average "normal" child at any given chronological age. It was felt that teachers of mentally retarded children were sufficiently cognizant of normal motor functioning at the various age levels to give ratings with a fair degree of accuracy.

The measures of central tendency and variability of teachers' ratings of motor coordination for both groups are given in Table IX.

TABLE IX

Means, Standard Deviations, and Ranges of Teachers' Ratings of Motor Coordination of Pupils in Homogeneous Experimental and Heterogeneous Control Classes by Type of Class, Educability Level, and Sex as of October 1, 1957

Type of Class	Ed Level	Boys				Girls			
		N	M	σ	Range	N	M	σ	Range
Ed I (Exp)	I*	317	3.12	.85	1-5	206	3.28	.97	1-5
	II	22	3.00	1.13	1-5	11	2.27	.77	1-3
	Other	18	3.22	.86	2-5	2	2.50	.50	2-3
Ed II (Exp)	I	6	3.50	.96	2-5	9	3.00	.66	2-4
	II*	121	2.55	.95	1-5	64	2.45	.86	1-4
	Other	5	1.80	.75	1-3	2	1.50	.50	1-2
Control	I*	179	3.30	.91	1-5	207	3.42	.94	1-5
	II*	156	2.57	.98	1-5	125	2.52	1.08	1-5
	Other	31	2.71	1.28	1-5	10	2.90	1.14	1-5

*See text below

The rows identified by asterisks in the above table identify the statistics concerning the groups from which samples were drawn for comparisons of the two plans of instruction. The results of these comparisons appear later in the chapter.

As with the comparisons presented in the previous tables the experimental and control Ed I pupils received higher ratings than did the Ed II pupils in either group. One inconsistency is noted, however, in four of the six possible comparisons in Table IX, the mean ratings of pupils designated as "other" exceeds those of the Ed II pupils in comparable categories.

Results in the Various Areas Under Study

The one-track and two-track plans were compared for growth during the 1957-1958 year in the areas of academic achievement, motor coordination, speech, personal and social adjustment, pupils attitudes, activities and interests. Teachers, supervisors, and principals evaluated the two plans.

Academic Achievement

For the past few years the teachers of Bureau CRMD utilized the Metropolitan Achievement Tests for measuring their pupils' arithmetic and reading abilities. Since the Study-developed tests were still in the process of construction, the Metropolitan Test was used to assess growth in arithmetic and reading during the 1957-1958 school year. The New York Reading Readiness Test was used to measure the progress of the Study's pre-reader population.

During the first year of the experiment, the Bureau CRMD made available data from the customary annual administration of the achievement tests. These measures were, as usual, obtained at the beginning of the school year. Teachers normally select any one or more of the four levels of the Metropolitan Battery which they feel may be appropriate for their individual pupils. In addition, no particular effort is made or usually required to keep the form of the test constant (some levels of the Metropolitan come in as many as 5 alternate forms). Although adequate for the purposes of the Bureau CRMD, the variety of forms and levels presented unique problems to the Study. To further complicate matters, at the final (June 1958) testing many teachers chose a test level and/or forms other than the one given initally.[1] In view of the variety of test levels and forms the matching of an adequate number of pairs of pupils from each plan was difficult to achieve. In addition to the usual variables which might be considered important, each experimental student had to be matched with his control counterpart on the form and level of the test taken initially as well as finally. Grade scores derived from different levels of the test were not accepted as the same criterion measure, therefore, separate analysis were completed for each level.

Each experimental pupil used in the analysis of growth in reading and arithmetic was matched with a control pupil on sex, age, I.Q., ratings of social maturity and emotional stability, and teacher's rating of the educability level. As stated above, they were also matched on having taken the same test forms. Table X reports the means and standard deviations on the matching variables of the various sub-groups that took the same initial test level and the same final test level.

Although as many pairs of pupils were matched as could be obtained, some comparisons could only be made on a relatively small number. A turnover rate of about 50 percent in the classes within the Bureau CRMD during the school year, as well as the loss due to the restrictions placed by the several matching variables considerably reduced the number of pupils available for certain of the comparisons.

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[1] End-of-year testing with standardized tests is not a usual practice of the Bureau CRMD. The final testing referred to here was done at the request of the Study.

TABLE X

Means, Standard Deviations, and Significance of the Differences Between the Means of Matching Variables of Various Sub-groups for the Analysis of Growth in Reading and Arithmetic for the Indicated Number of Experimental and Control Matched Pairs

Initial Test[1]	Final Test	Matching Variable	Group	N	Boys		Girls		M	σ	Mean Diff. Exp - Con	t	P
					Ed I	Ed II	Ed I	Ed II					
N.Y. Reading Readiness	N.Y. Reading Readiness	Age	Exp	15	8	4	2	1	125.67	18.01	-1.67	.24	.90-.80
			Con	15	8	4	2	1	127.33	18.54			
		I.Q.	Exp	15	8	4	2	1	64.00	8.39	1.93	.59	.60-.50
			Con	15	8	4	2	1	62.07	8.92			
		Social Maturity	Exp	15	8	4	2	1	2.20	.91	-.40	1.07	.30-.20
			Con	15	8	4	2	1	2.60	1.08			
		Emotional Stability	Exp	15	8	4	2	1	2.00	.36	-.47	.39	.70-.60
			Con	15	8	4	2	1	2.47	1.14			
Metropolitan Primary I	Primary II	Age	Exp	50	20	8	13	9	144.84	24.92	.22	.04	1.00-.90
			Con	50	20	8	13	9	144.62	24.59			
		I.Q.	Exp	50	20	8	13	9	64.68	7.38	.60	.38	.70-.60
			Con	50	20	8	13	9	64.08	8.18			
		Social Maturity	Exp	50	20	8	13	9	2.88	1.24	.12	.51	.70-.60
			Con	50	20	8	13	9	2.76	1.11			
		Emotional Stability	Exp	50	20	8	13	9	2.78	1.21	.08	.36	.80-.70
			Con	50	20	8	13	9	2.70	1.10			

[1] The pairs were also matched on same form of the test.

TABLE X (continued)

Initial Test[1]	Final Test	Matching Variable	Group	N	Boys Ed I	Boys Ed II	Girls Ed I	Girls Ed II	M	σ	Mean Diff. Exp - Con	t	P
Metropolitan Primary I	Metropolitan Primary II	Age	Exp	19	11	0	6	2	142.37	20.82	-.21	.03	1.00-.90
			Con	19	11	0	6	2	142.58	20.08			
		I.Q.	Exp	19	11	0	6	2	69.89	5.41	.74	.44	.70-.60
			Con	19	11	0	6	2	69.16	4.64			
		Social Maturity	Exp	19	11	0	6	2	3.11	.53	.16	.70	.50-.40
			Con	19	11	0	6	2	2.95	.82			
		Emotional Stability	Exp	19	11	0	6	2	3.00	.56	.32	1.21	.30-.20
			Con	19	11	0	6	2	2.68	.99			
Metropolitan Primary I	Metropolitan Primary II	Age	Exp	26	17	0	5	4	162.27	14.74	.42	.10	1.00-.90
			Con	26	17	0	5	4	161.85	14.99			
		I.Q.	Exp	26	17	0	5	4	66.62	6.40	-.46	.24	.90-.80
			Con	26	17	0	5	4	67.08	7.11			
		Social Maturity	Exp	26	17	0	5	4	2.92	.74	-.42	1.76	.10-.05
			Con	26	17	0	5	4	3.35	.94			
		Emotional Stability	Exp	26	17	0	5	4	2.92	1.02	-.35	1.13	.20-.10
			Con	26	17	0	5	4	3.27	1.17			

1. The pairs were also matched on same form of the test.

TABLE X (continued)

Initial Test[1]	Final Test	Matching Variable	Group	N	Boys Ed I	Boys Ed II	Girls Ed I	Girls Ed II	M	σ	Mean Diff. Exp - Con	t	P
Primary II	Metropolitan Elementary	Age	Exp	17	8	0	9	0	166.00	16.96	.71	.12	1.00-.90
			Con	17	8	0	9	0	165.29	16.14			
		I.Q.	Exp	17	8	0	9	0	68.06	4.70	.24	.14	.90-.80
			Con	17	8	0	9	0	67.82	5.05			
		Social Maturity[2]	Exp	17	8	0	9	0	3.00	.69	-.59	2.09	.05-.02
			Con	17	8	0	9	0	3.59	.17			
		Emotional Stability	Exp	17	8	0	9	0	3.06	.87	-.24	.92	.40-.30
			Con	17	8	0	9	0	3.29	.69			
Elementary	Metropolitan Elementary	Age	Exp	33	15	0	16	2	170.82	9.17	-.70	.31	.80-.70
			Con	33	15	0	16	2	171.52	8.72			
		I.Q.	Exp	33	15	0	16	2	67.94	5.60	-.12	.08	1.00-.90
			Con	33	15	0	16	2	68.06	5.76			
		Social Maturity	Exp	33	15	0	16	2	3.40	.83	-.30	1.50	.20-.10
			Con	33	15	0	16	2	3.70	.82			
		Emotional Stability	Exp	33	15	0	16	2	3.40	.76	-.30	.30	.80-.70
			Con	33	15	0	16	2	3.70	.78			

1. The pairs were also matched on same form of the test.
2. On this variable the matched pairs were not equated for Social Maturity.

As indicated in Table X, the six sub-groups were equated on chronological age, I.Q., teacher ratings of emotional stability, but not on ratings of social maturity. Further, each pair of pupils was matched on sex and teacher's rating of educability. No significant differences were found at any level between any of the means for the matching variables. Another indication of the success of the matching is the fact that reasonably high correlations (at least .80) were found between the initial achievement scores of the pairs of pupils. Such imperfections in matching as may have been reflected in initial scores on the Metropolitan Achievement Tests or the New York Reading Readiness Test were controlled for statistically through the use of the analysis of covariance technique in the comparison of the final criterion measures. This technique reduced the loss of cases that would have occurred had the initial score been introduced as another matching variable.

When the chronological ages of the sub-samples were combined and compared with the general city-wide CRMD population, no significant mean differences were found between the two groups. These data are as follows:

	N	M	σ	Mean Diff. P-S	t	P
Experimental Sample	160	153.19	23.68	.36	.19	.90-.80
City-Wide CRMD Population	9801	153.66	29.19			
Control Sample	160	153.30	23.34	.36	.25	.90-.80
City-Wide CRMD Population	9801	153.66	29.19			

It may be noted from the preceding data that the means of these samples are almost identical with those of the CRMD city-wide population. However, the standard deviations are different by almost six months, indicating that the variability in the sample only roughly approximates that of the city-wide CRMD population. Since no overall analyses on the Metropolitan Achievement Tests were made, the data above are only presented to show that these samples are not too unlike the much larger population from which they were originally assigned to the experiment.

A similar analysis was performed on the combined mean I.Q.s of the sub-samples. The data are presented below.

	N	M	σ	Mean Diff. P-S	t	P
Experimental Sample	160	66.58	6.80	-.68	1.82	.10-.05
City-Wide CRMD Population	9574	65.90	6.86			
Control Sample	160	66.20	7.34	-.30	1.07	.30-.20
City-Wide CRMD Population	9574	65.90	6.86			

This analysis indicates that the sub-samples are not significantly different from the city population in mean I.Q.

Table XI presents the results of the analysis of covariance performed on the reading grades. This analysis revealed that one significant difference occurred between the groups. This significant difference which was in favor of the experimental group appeared in the comparison of the groups which were given the elementary level, initially and finally.

TABLE XI

Results of the Analysis of Covariance of Metropolitan Reading Test Grade Scores Between Matched Pairs of Experimental and Control Pupils[1]

Group	N	Initial M	Initial σ	Final M	Final σ	F
Reading Readiness Initial - Reading Readiness Final						
Exp	15	38.67	28.95	53.33	29.37	-
Con	15	41.33	27.78	49.33	30.66	
Primary 1 Initial - Primary 1 Final						
Exp	50	1.76	.30	1.99	.42	-
Con	50	1.74	.28	1.99	.42	
Primary 1 Initial - Primary 2 Final						
Exp	19	2.16	.39	2.54	.54	-
Con	19	2.21	.50	2.66	.55	
Primary 2 Initial - Primary 2 Final						
Exp	26	2.70	.54	3.18	.68	1.86
Con	26	2.69	.63	3.09	.77	
Primary 2 Initial - Elementary Final						
Exp	17	3.18	.42	3.50	.70	1.75
Con	17	3.30	.73	3.79	.71	
Elementary Initial - Elementary Final						
Exp	33	3.97	.71	4.55	.77	5.54*
Con	33	3.78	.80	4.17	.85	

1. Reading Readiness scores are in percentiles. All remaining scores are grade level scores on the Metropolitan Achievement Test.

*Significant at the 5% level of confidence.

Table XII presents the means and standard deviations of the initial and final arithmetic test scores, and the results of the analysis of covariance. The analysis of the arithmetic grade scores showed no significant differences between the experimental and control groups. Arithmetic measures were not available on the group initially given the reading readiness test so they are omitted from Table XII. Without exception, all groups gained in arithmetic grades between initial and final sessions.

TABLE XII

Results of the Analysis of Covariance of Metropolitan Arithmetic Test Grade Scores Between Matched Pairs of Experimental and Control Pupils

Group	N	Initial		Final		F
		M	σ	M	σ	
		Primary 1 Initial - Primary 1 Final				
Exp	50	1.90	0.63	2.28	0.69	-
Con	50	2.27	0.69	2.64	0.71	
		Primary 1 Initial - Primary 2 Final				
Exp	19	2.66	0.40	3.26	0.61	2.08
Con	19	2.56	0.61	3.53	0.50	
		Primary 2 Initial - Primary 2 Final				
Exp	26	3.33	0.65	3.57	0.75	-
Con	26	3.19	0.74	3.51	0.60	
		Primary 2 - Initial - Elementary Final				
Exp	17	3.74	0.56	4.35	0.52	-
Con	17	3.46	0.79	4.14	0.84	
		Elementary Initial - Elementary Final				
Exp	33	4.43	0.68	4.72	0.79	1.11
Con	33	4.29	0.70	4.65	0.67	

Since only one of the eleven analyses presented in Tables XI and XII showed differences significant beyond the 5 percent level of confidence, this one significant difference might well have occurred by chance.

Measures of Growth in Several Areas

Growth in a number of areas was measured at the end of the 1957-1958 school year through the use of teachers' ratings. These ten areas included gross motor and eye-hand coordination, speech, emotional stability, social maturity, punctuality and attendance, school work habits, willingness to learn, health habits, and interests.

At the start of the experiment the Study did not have suitable measuring instruments to establish the initial standing of pupils in the two plans of instruction. For this reason end-of-year teacher ratings of growth in the various areas during the first year of the experiment were obtained for samples of experimental and control pupils using the following scale: 1- considerably poorer, 2- slightly poorer, 3- no change, 4- slightly improved, 5- considerably improved.

The same samples of pupils were utilized in the statistical analysis for pupil growth in each of the areas. Once samples of pupils from the reorganized plan had been matched on various attributes with samples from the non-reorganized plan, these samples were retained for the analysis of growth in each of the ten areas.

Individual pupils from the homogeneous experimental classes were matched with individual pupils from the heterogeneous control classes on sex, chronological age, I.Q., and teachers' ratings of educability.[1,2]

Sampling

It was important that the matched samples of experimental and control pupils be reasonably representative of the total city-wide population of retarded pupils or a distinguishable section of this population. As the same matched samples were used for a comparison of the two plans for growth in the various areas, a knowledge of how well the samples represented the total population was desirable for purposes of generalization. Thus, before showing the equality of the two samples on chronological age and I.Q., the samples will be compared to the total city-wide CRMD population.[3] The I.Q. data for the samples and total city-wide population are presented in Table XIII.

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1. Unless otherwise stated the variables used for matching in this section of the report are: sex, chronological age, I.Q., and educability, in combination.

2. The proportion of pupils rated high educable or low educable were held to two-to-one in both experimental and control samples. This proportion was derived from teachers' ratings of educability among the Study's total sample of control classes.

3. Since high school CRMD pupils were not included in the experiment, these were excluded from the city-wide data presented in this and subsequent sections.

TABLE XIII

The Significance of the Differences Between Sample Intelligence Quotient Means for Matched Boys and Girls and the Corresponding Means in the Total City CRMD Population*

Group	N	M	SD	Mean Diff. P-S	t	P
All Matched Exp Boys	114	66.36	7.43	-.33	.47	.70-.60
All Boys in City Pop.	5594	66.03	6.72			
All Matched Con Boys	114	66.28	7.04	-.25	.39	.70-.60
All Boys in City Pop.	5594	66.03	6.72			
All Matched Exp Girls	87	64.45	7.88	.50	.59	.60-.50
All Girls in City Pop.	3980	64.95	7.81			
All Matched Con Girls	87	64.36	7.78	.59	.70	.50-.40
All Girls in City Pop.	3980	64.95	7.81			

* CRMD high school pupils were excluded

Table XIII indicates that the mean I.Q.'s of the experimental and control samples of boys and girls were all within six tenths of one point of the respective means for the total city-wide CRMD population. All mean I.Q. differences were not statistically significant. The standard deviations of the I.Q.'s of these samples of boys and girls were close to those of the general CRMD population.

Comparisons of the matched samples to the city-wide CRMD population with respect to chronological age are shown in Table XIV.

TABLE XIV

The Significance of the Differences Between Sample Chronological Age Means for Matched Boys and Girls and the Corresponding Means in the Total City CRMD Population*

Group	N	M	SD	Mean Diff. P-S	t	P
All Matched Exp Boys	114	154.39	22.99	-.63	.29	.80-.70
All Boys in City Pop.	5714	153.76	29.52			
All Matched Con Boys	114	154.39	22.86	-.63	.29	.80-.70
All Boys in City Pop.	5714	153.76	29.52			
All Matched Exp Girls	87	155.49	22.09	-1.97	.83	.50-.40
All Girls in City Pop.	4087	153.52	28.71			
All Matched Con Girls	87	155.34	22.19	-1.82	.76	.50-.40
All Girls in City Pop.	4087	153.52	28.71			

*CRMD high school pupils were excluded

As shown in Table XIV, the mean chronological ages of the matched samples were quite similar to those of the city-wide CRMD population. The sample means for both boys and girls were within two months of those of their corresponding parent populations. However, since the standard deviations of all four samples were approximately seven months smaller than those of their populations, it was reasonable to suspect some restriction in the representation of the population at the extremes of the range of chronological age. Supplementary tests indicated that the standard deviations of the samples were in fact statistically significant from those of the corresponding sections of the city-wide CRMD population.

To make it possible to study in detail how the matched samples differed from the population, frequency distribtuions of chronological age in the experimental samples and the city-wide CRMD populations were compared. It will be shown later that the control and experimental samples were quite similar, so that separate comparisons of the control samples with the city-wide CRMD population were not necessary. The chronological ages of the matched experimental sample of boys ranged from 8.5 to 17.0 years. The age range of the city-wide CRMD population of boys, on the other hand, was from 6.0 to 18.9 years. It was found that the 6.0 to 8.5 age group, which was not represented in the matched sample of experimental boys, constituted 4.0% of the city-wide CRMD population of boys. Moreover, the 17.0 to 18.9 age groups which also was not represented in the experimental group, constituted 2.1% of the city-wide CRMD population of boys.[1] The sample of experimental boys might best be described as a group roughly similar in age composition to the city-wide CRMD population between the ages of 8.5 to 17.0, but with inadequate representation for those in the youngest year (8.5 to 9.5) and oldest year-and-one-half (15.4 to 17.0) within this group.

To check upon how accurately the matched sample of experimental boys might be described as representing all boys in the city-wide population between the ages of 8.5 to 17.0 years, the mean and standard deviation of all boys within this range in the city population were computed. The standard deviations of the sample and this restricted range of age in the city population of CRMD boys now differed by approximately three rather than seven months (22.99 months for the experimental sample and 26.46 months for the restricted range of the city population). However, this difference between the sample and population standard deviations remained statistically significant. The difference between the means increased, raising the mean for the restricted age range of boys, from less than one month to approximately three months (154.39 months for the experimental sample and 157.08 for the city population). This difference between the means was not statistically significant. The differences between these means and standard deviations were small enough to warrant a description of the sample of experimental boys as reasonably representative of the city-wide population of boys between the ages of 8.5 and 17.0 years.

As with the boys, supplementary descriptive and statistical analyses of the chronological ages were performed for the girls in order to more adequately describe the relationship between the experimental sample and its population. The chronological ages in the matched experimental sample of girls ranged from 8.0 to 16.0 years. The 2% of the city-wide CRMD population of girls under 8.0 years and the 8.8% over 16.0 years received no representation in the sample.[2]

When the sample of experimental girls was compared on chronological age to the city-wide CRMD population within the 8.0 to 16.0 year range, no statistically significant differences were found in the means or standard deviations. The means of the sample and the population with the restricted age range were 155.49 and 151.23 months, respectively. The standard deviations were 22.09 and 24.74 months, respectively. As expected, employing the restricted age range population of CRMD girls reduced the difference between the standard deviations of the samples and the population from approximately seven months to three months.

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[1] Due to the paucity of cases at the extremes, the matching of these cases became extremely difficult. This difficulty was increased by the fact that several matching variables were employed.

[2] The age range for girls in the city-wide population was the same as that for boys, 6.0 to 18.9 years.

In summary, the experimental sample of 87 matched girls may be described as reasonably representative of the city-wide population within the ages of 8.0 and 16.0. The standard deviations of chronological age of the experimental sample of 114 matched boys has been shown to be statistically significant from that of the boys' parent population. Since this difference was but three months they may be considered as reasonably representative of the population of boys within the ages of 8.5 and 17 years. Further, since the experimental and control groups will be shown later to be equal to each other in chronological age, this three month difference from exact representativeness as to variability did not materially affect the outcome of the analysis.

A comparison of the experimental samples and the population has just been discussed, now data will be presented on the matching of the pupil samples from the experimental and control plans. Data on chronological age and I.Q. are presented in Table XV by level of educability within each of the two plans. The percents of boys within the high and the low educable levels were held to approximately 52%, to correspond to the percent of boys in the city-wide CRMD population.

TABLE XV

Equation of Groups Matched on Sex, Educability, Intelligence Quotient, and Chronological Age Used in the Comparison of Pupil Growth in the Ten Areas

Group		N	M	SD	Mean Diff. E-C	t	P
					Intelligence Quotients		
High	Exp	58	68.22	5.26			
Ed					.00	-	1.00
Girls	Con	58	68.22	5.01			
High	Exp	76	69.67	4.59			
Ed					.22	1.22	.30-.20
Boys	Con	76	69.45	4.40			
Low	Exp	29	56.97	7.07			
Ed					.35	.63	.50-.40
Girls	Con	29	56.62	6.48			
Low	Exp	38	59.74	7.61			
Ed Bo					-.21	.53	.50-.40
Boys	Con	38	59.95	6.97			
					Chronological Age		
High	Exp	58	152.09	22.28			
Ed					.00	-	1.00
Girls	Con	58	152.09	22.38			
High	Exp	76	150.13	23.08			
Ed					.10	.71	.40-.30
Boys	Con	76	150.03	22.02			
Low	Exp	29	162.31	18.15			
Ed					.45	.71	.50-.40
Girls	Con	29	161.86	20.15			
Low	Exp	38	162.92	20.18			
Ed					-.19	.40	.70-.60
Boys	Con	38	163.11	20.28			

As shown in Table XV no significant differences between the experimental and control groups were found on chronological age or I.Q. for the following sub-groups consisting of matched experimental and control pairs: high educable girls, high educable boys, low educable girls, and low educable boys. The largest difference between I.Q. means was approximately one-third of one point, while the largest difference in age was one-half of one month. The standard deviations of the experimental and control samples were roughly similar and showed no statistically significant differences. The four sets of samples may be considered matched for the purposes of the Study.

The Comparisons of Growth

Although data for a comparison of the two plans were gathered on a five-point rating scale of pupil growth, the teachers reported it was difficult to discriminate between slight and considerable degrees of change as required on the scale. Therefore the scale was modified to include only three categories - poorer, unchanged, and improved. A breakdown of the data on this basis emphasized the child himself as a criterion for his growth. In view of the nature of the data the sign test[1] was applied to analyze the results.

The Results for Ed I Pupils

Comparisons of teachers' ratings of pupil improvement in the ten areas will be reported separately for the 134 matched pairs of high educable pupils, and the 67 matched pairs of low educable pupils. The results in the various areas for high educable boys and girls are reported separately and combined in Table XVI.

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[1] M. W. Tate and R, C. Clelland, Nonparametric and Shortcut Statistics, Danville, Ill.: The Interstate Printers and Publishers, Inc., 1957. p.100.

TABLE XVI

Summary of the Critical Ratios (z) and Probabilities Resulting from the Sign Test Analysis of Teachers' Ratings of Improvement in Ten Areas for 134 Matched Pairs of Ed I Pupils from the Two Plans

Area	76 Pairs of Matched Boys			58 Pairs of Matched Girls			Total: 134 Pairs of Matched Boys and Girls		
	z	P	In Favor of	z	P	In Favor of	z	P	In Favor of
Gross Motor Coordination	.81	.41	Con	1.60	.11	Con	1.76	.07	Con
Eye-Hand Coordination	.15	.88	Con	.42	.67	Con	.50	.61	Con
Intelligibility and Spontaneity of Speech	0.00	1.00	—	1.67	.09	Exp	1.02	.31	Con
Emotional Stability	1.14	.25	Exp	.59	.55	Con	.38	.70	Exp
Social Maturity	1.05	.29	Exp	.22	.82	Con	.55	.58	Exp
School Work Habits	.63	.52	Exp	1.02	.31	Exp	1.24	.21	Exp
Willingness to Learn	1.25	.21	Exp	1.18	.24	Exp	1.88	.06	Exp
Range and Diversity of Interests	.17	.86	Con	0.00	1.00	—	.25	.80	Con
Punctuality and Attendance	.99	.32	Con	0.00	1.00	—	.80	.42	Con
Health Habits	.49	.62	Con	2.40	.02*	Exp	1.14	.25	Exp

*Significant at or beyond the 5% level of confidence

As shown in Table XVI, no significant differences were found between the experimental and control samples of high educables boys for ratings of improvement in the ten areas, nor did any of the differences approach significance.

However, for the girls a significant difference in favor of the reorganized plan was obtained in the area of health habits. The differences in the remaining areas were not statistically significant.

The teachers' ratings of growth show no general differences between the samples of high educable CRMD pupils from the reorganized and non-reorganized plans. The one significant difference obtained — apparently showed greater improvement in the health habits of Ed.I girls in the reorganized plan. Comparisons in six of the ten areas favored the reorganized plan, while four favored the non-reorganized. Only two of the ten areas yielded probabilities of true differences between the plans approaching statistical significance: the control plan was favored for gross motor coordination (P=.07), and the experimental plan was favored for willingness to learn (P=.06).

The Results for Ed II Pupils

The results for the 67 matched pairs of low educable pupils appear in Table XVII.

The most striking feature of the results shown in Table XVII is the fact that only one comparison favored the non-reorganized plan. In all ten areas the analysis for the matched pairs of girls favored the experimental plan. The new plan was also favored for the boys in nine of the ten areas.

TABLE XVII

Summary of the Critical Ratios (z) and Probabilities Resulting from the Sign Test Analysis of Teachers' Ratings of Improvement in Ten Areas for 67 Matched Pairs of Ed II Pupils from the Two Plans

Area	38 Pairs of Matched Boys			29 Pairs of Matched Girls			Total: 67 Pairs of Matched Boys and Girls		
	z	P	In Favor of	z	P	In Favor of	z	P	In Favor of
Gross Motor Coordination	.25	.80	Con	1.25	.21	Exp	.53	.76	Exp
Eye-Hand Coordination	.64	.52	Exp	1.87	.06	Exp	1.83	.07	Exp
Intelligibility and Spontaneity of Speech	2.46	.01**	Exp	2.12	.03*	Exp	3.41	.001**	Exp
Emotional Stability	.24	.84	Exp	1.18	.24	Exp	1.17	.24	Exp
Social Maturity	1.38	.17	Exp	1.03	.30	Exp	1.89	.05*	Exp
School Work Habits	1.75	.08	Exp	2.43	.01**	Exp	3.08	.002**	Exp
Willingness to Learn	1.43	.15	Exp	2.07	.04*	Exp	2.56	.01**	Exp
Range and Diversity of Interests	1.07	.28	Exp	3.21	.001**	Exp	3.13	.002**	Exp
Punctuality and Attendance	1.75	.08	Exp	1.83	.07	Exp	2.69	.01**	Exp
Health Habits	2.01	.04*	Exp	2.59	.01**	Exp	3.41	.001**	Exp

* Significant at or beyond the 5% level of confidence
**Significant at or beyond the 1% level of confidence

Statistically significant results were obtained for the girls separately in four areas, while such results were obtained in only two areas for the boys. The most substantial difference between the sexes appeared for range and diversity of interests, where the respective probabilities in favor of the new plan for boys and girls were .28 and .001. Where the samples of boys and girls were combined the new plan was favored in all areas with statistically significant results in seven of the ten areas:

1. Intelligibility and Spontaneity of Speech (P =.001)
2. Social Maturity (P=.05)
3. School Work Habits (P=.002)
4. Willingness to Learn (P=.01)
5. Range and Diversity of Interests (P=.002)
6. Punctuality and Attendance (P=.01)
7. Health Habits (P=.001)

In addition, statistical significance was approached in favor of the new plan in the comparison of the combined samples of teachers' ratings of eye-hand coordination.

Summary of Teachers' Ratings of Improvement in the Ten Pupil Growth Areas

With respect to chronological age and I.Q. the matched samples of boys were reasonably representative of the city-wide population of CRMD boys between the ages of 8.5 and 17.0 years. The matched samples of girls were equivalent to the city-wide population of girls between the ages of 8.0 and 16.0

The results of the sign test analysis of the teachers' ratings of growth in ten areas for Ed I pupils indicated no general trend in favor of either plan, although a statistically significant result in the area of health habits was obtained for the high educable girls. However, the latter result was not significant when the Ed I boys and girls were combined.

The results for Ed II pupils were statistically significant in seven of the ten areas in favor of the reorganized plan. In all ten areas the new plan was favored for the combined Ed II boys and girls. The results seem to indicate somewhat more improvement for the girls, but the trend in this direction was not pronounced.

Results in the Area of Peer Acceptance

Toward the close of the 1957-1958 school year each teacher in the experiment listed the names of the children who were "liked or accepted by almost everyone else in class" and the names of those who were "disliked or rejected by almost everyone else in class." To test for the effects of the reorganized and non-reorganized plans on peer acceptance, the percents of children listed as "liked" or "disliked" (including those rejected), and the percents "not mentioned" were compared for the homogeneous experimental and heterogeneous control classes.

A number of analyses of groups and sub-groups were performed on teachers' reports of peer acceptance. In addition to a comparison of all children in these classes in the two plans, separate analyses were made which considered the educability levels of the classes and the pupils. Before presenting the results of these analyses the composition of the experimental and control samples will be described.

Pupils contributing toward the data for peer acceptance were all pupils in the classes in question. This was necessarily the case, since each pupil's acceptance by his entire class was the point at issue in comparing the two plans. The classes at the close of the school year included two types of pupils that generally did not contribute directly toward the data for the Study's analyses in other areas such as academic achievement or personal and social adjustment. These two types, which were not mutually exclusive, were:

a. Pupils who entered the classes during the school year. Since the pupil turnover in special education classes is typically high, a considerable proportion of such pupils contributed toward the data gathered at the close of the year. Data on pupil turnover are presented in the Appendix.

b. Pupils classified as "Other" rather than as Ed I or Ed II. Most of these pupils were judged by teachers as most suitably placed in either a corrective, disciplinary institution or a custodial institution.

A breakdown according to educability ratings of all pupils in homogeneous experimental and heterogeneous control classes appears in Table XVIII.

TABLE XVIII

Frequencies of Pupils Classified by Teachers as Ed I, Ed II, or Other, in Homogeneous Experimental and Heterogeneous Control Classes

Type of Class	N	Ed I	Ed II	Other
Exp Ed I	738	661	52	25
Exp Ed II	273	16	248	9
Total Exp	1011	677	300	34
Total Con	1013	521	427	65

Note that the control sample included 427 low educable pupils, as compared to 300 in the experimental sample, in spite of the fact that the total numbers of Ed I and Ed II cases were approximately equal. This difference in the proportions in the various categories was due to the fact that the most heterogeneous of the control classes as selected for this study approached an even split between high and low educable pupils.

In comparing all pupils in homogeneous reorganized classes with all pupils in heterogeneous non-reorganized classes, a statistical adjustment was made to equalize the two plans with respect to their percents of low educable pupils. This adjustment was necessary since 42.2% of pupils in the heterogeneous control classes had been rated by teachers in the lower educable category, while 29.7% had been so rated in the homogeneous experimental classes. As the ratio of high to low educable pupils in the Study's original population had been found to approximate two to one, 127 low educable control pupils of the 1013 total of all types (low educable, high educable, and other) were dropped for this one, overall analysis. These low educable pupils were dropped from the "liked," "not mentioned," and "disliked" categories in the same proportions as were actually found among all Educable II pupils in the heterogeneous control classes. The results of this comparison of all pupils in homogeneous control classes with the adjusted number of pupils in heterogeneous control classes appears in Table XIX.

TABLE XIX

Results of a Chi-square Analysis of Percents of Pupils Listed by Teachers as Liked or Disliked, and Percents Not Mentioned for All Pupils in Homogeneous Experimental Classes Versus an Adjusted Total of Pupils in Heterogeneous Control Classes

Groups	N	% Liked	% Not Mentioned	% Disliked or Rejected	X^2	d.f.	P
All pupils in Exp Classes	1011	64.6	26.6	8.8	2.98	2	.30-.20
All pupils in Con Classes*	886	60.8	29.9	9.3			

*Adjusted total to equalize percents of Ed II pupils in two plans

As indicated in Table XIX, no significant difference was found between the two plans in the distributions of pupils in the "liked," "not mentioned," and "disliked" categories. It should be noted that all types of children (Ed I, Ed II, and "Other") in the classes involved were included in these analyses.

When all the pupils in the control classes are compared to all the pupils of the experimental Ed I classes and Ed II classes separately, the results present a somewhat different picture. As noted in Table XX a highly significant difference in peer acceptance in favor of the Ed II classes was obtained. No significant difference is found in the comparison involving the Ed I classes.

TABLE XX

Results of a Chi-square Analysis of Percents of Pupils Listed by Teachers as Liked or Disliked, and Percents Not Mentioned for All Pupils in Homogeneous Experimental and Heterogeneous Control Classes

Groups	N	% Liked	% Not Mentioned	% Disliked or Rejected	X^2	d.f.	P
All Pupils in Ed I Classes	738	62.2	27.8	10.0	1.57	2	.30-.20
All Pupils in Con Classes	1013	59.6	30.5	39.9			
All Pupils in Ed II Classes	273	71.1	23.4	5.5	12.82	2	<.01
All Pupils in Con Classes	1013	59.6	30.5	9.9			

In one of the analyses of sub-groups, all Educable I pupils in control classes were compared with similar pupils in Educable I classes. The results of this analysis appear in Table XXI.

TABLE XXI

Results of a Chi-square Analysis of Percents of Pupils Listed by Teachers as Liked or Disliked, and Percents Not Mentioned for Ed I Pupils in Homogeneous Ed I Classes Versus Ed I Pupils in Heterogeneous Control Classes

Groups	N	% Liked	% Not Mentioned	% Disliked or Rejected	X^2	d.f.	P
Ed I Pupils in Ed I Classes	661	65.5	27.0	7.4	5.22	2	.10-.05
Ed I Pupils in Con Classes	521	69.7	25.9	4.4			

Although the control Ed I pupils have a higher percent of liked, and a smaller percent of disliked pupils than do their counterparts in the experimental plan, this difference in peer acceptance between the two is not statistically significant.

An analysis similar to the above was performed for low educable pupils. The peer acceptance of low educable pupils in Ed II classes of the reorganized plan was compared to that of low educables in heterogeneous control classes. The percents of these pupils falling in the "liked," "not mentioned" and "disliked" categories are shown in Table XXII.

TABLE XXII

Results of a Chi-square Analysis of Percents of Pupils Listed by Teachers as Liked, or Disliked, and Percents Not Mentioned for Ed II Pupils in Ed II Classes Versus Ed II Pupils in Heterogeneous Control Classes

Groups	N	% Liked	% Not Mentioned	% Disliked or Rejected	X^2	d.f.	P
Ed II Pupils in Ed II Classes	248	73.0	22.2	4.8	33.74	2	<.01
Ed II Pupils in Control Classes	427	51.1	34.9	14.0			

As indicated in Table XXII, the reorganized plan was favored for low educable pupils at beyond the 1% level of confidence. Contrary to the results for the high educables, the results for the "liked" and the "disliked" categories favored the new plan. It would appear that the greater social interaction among low educables pupils in Ed II classes was reflected in more of these pupils being "liked" and fewer being "disliked".

Inherent in the reorganization was the possibility that some children might be misclassified and placed in a reorganized class that did not correspond with their level of educability. Among the total 1011 children in experimental classes included in the present analysis were sixteen high educable pupils[1] in Ed II classes, and fifty-two low educables in Ed I classes. The fifty-two low educables constituted approximately one-sixth of all low educable pupils in the Study's sample of homogeneous experimental classes. A comparison of the peer acceptance of these apparently misclassified low educable pupils with that of low educables in Ed II classes appears in Table XXIII.

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[1] The peer acceptance of these apparently misplaced high educables in Ed II classes is indicated by the fact that 11 (69%) were liked, 5 (31%) were not mentioned, and none were disliked. This distribution seems to show social interaction similar to that found among the high educables in Ed I classes (See Table XXI).

TABLE XXIII

Results of a Chi-square Analysis of Percents of Pupils Listed by Teachers as Liked or Disliked, and Percents No Mentioned for Educable II Pupils in Educable II Classes Versus Educable II Pupils in Educable I Classes

Groups	N	% Liked	% Not Mentioned	% Disliked or Rejected	X^2	d.f.	P
Ed II Pupils in Ed II Classes	248	73.0	22.2	4.8	41.68	2	<.01
Ed II Pupils in Ed I Classes	52	40.4	26.9	32.7			

The distributions among the various peer acceptance categories were significantly different for low educables who were placed in Ed II classes as compared to those low educables placed in Ed I classes. The biggest difference was in the percents liked in the two plans, where 73.0% of properly placed low educable pupils were "liked," as compared to 40.4% of low educables in Ed I classes. A supplementary analysis indicated that the fifty-two low educables pupils in the experimental Ed I classes were also significantly less accepted by their peers than the total sample of low educables in heterogeneous control classes ($X^2 = 11.93$, d.f. = 2, P<.01).

Thus, the reorganized plan had greater peer acceptance of low educable pupils in Ed II classes, and poorer peer acceptance of a minority of apparently misclassified Educable II pupils constituting approximately one-sixth of all such pupils. Although there was a difference in favor of the control plan for high educables in the Ed I and control classes, this difference was not statistically significant.

Occupational Adjustment

Since the two-track plan had just gone into effect in the fall term of 1957, an assessment of occupational adjustment was not appropriate in the 1957-1958 school year. Time had to be allowed for the older students to be exposed to the new plan before they obtained jobs. In addition, the duration of their employment must have been sufficient for the employers to become familiar with their work habits. It was therefore decided that this assessment would be most appropriately conducted during the 1958-1959 school year. The results of this assessment are reported in Chapter VI.

Parent Reactions

One of the objectives of this experiment was to assess the reactions of parents toward the one-track and two-track plans. Parents' attitudes regarding their children's class placement, adjustment and academic achievement were assessed. During the first year of the experiment various ways of obtaining data from parents were tried out and revised for use in the 1958-1959 school year.

The Tryout of Home Interviews

To determine the practicability of interviewing parents at their homes, the parents of children in one class for retardates were requested to participate in a tryout of this technique. Ten pupils were enrolled in this class.

Letters signed by the principal of the school were distributed by the teacher to be brought home by the pupils. Attached to the letter was a checklist on which a parent could indicate his willingness to be interviewed on the day specified, and one of several two-hour periods during the day in which the parent would be found at home. No mention was made in the letter of the fact that only parents of a special class was involved. The parents of all ten children returned checklists through their children indicating their willingness to be interviewed at home. However, only four parents were actually found at home during the times they indicated.

During the interview the psychologist explained that the Board of Education was developing a questionnaire to be sent to the parents of children in special classes throughout the city. The mothers were then requested to fill out the questionnaire as though they had just received it in the mail and to indicate which questions, if any, did not seem clear.

The results of this tryout demonstrated the value of the face-to-face interview, as compared to a self-administered questionnaire. There was a marked discrepancy between each of the four women's answers on the questionnaire and their spontaneous comments to the interviewer. The four parents appeared to have considerable difficulty in reading and understanding the questions. The high percentage of parents who were not home, even after appointments had been made, suggested that a more effective system of arranging interviews would be necessary.

The Tryout of Interviews at the School

Another school was selected to determine whether it would be practical to interview parents by having them come to the school. This particular school was selected because it contained a wide range of levels of CRMD classes. The total CRMD register at the school was sixty-four. The procedure was as follows:

1. A psychologist visited the school and had conferences with the principal and each of the teachers involved. During the conferences, the purpose of the parent interview was outlined.

2. Letters from the principal, informing the parents of the time and place of the interview, were distributed to each child in the participating classes. The child was instructed to take the letter home, have his father or mother sign it and return it to school the next day. The letter mentioned that "parents of all pupils in special classes" were requested to come to school during specified periods on a certain day. Each cooperating parent indicated the period during the day that he expected to arrive for the interview.

3. On the next visit the psychologist collected the letters which had

been returned by those parents who agreed to be interviewed.

4. On the day of the interviews, four psychologists were assigned to the school to interview the parents.

Nineteen of the thirty parents (63%) who had agreed to be interviewed actually appeared at the school.

About 30% of all (N= 64) CRMD children at the school were represented at the interviews by their parents. The tryout indicated that this method would be adequate for parent interviews to be held during the 1958-1959 school year, with changes described below.

Changes in Interview Technique Based on the Tryout

The tryout at the school resulted in two major changes in the interview. First, the interview form was made considerably shorter. Questions asking the parents to evaluate the effect of their child's class placement on his interest in new hobbies, after-school activities, and vocational aspirations were eliminated because they were not successful in eliciting usable information. The parents interviewed were unable to differentiate between the effect of school training and the effect of home training in these areas. Other questions which were found to be repetitious or confusing were also eliminated. The final form consisted of nine questions designed to obtain the parent's opinion of the child's attitude towards school, his social adjustment, academic achievement, and self-sufficiency. Another question asked the parent whether the child had been in that particular school for longer than six months. This period was considered minimal to give the parent time to observe and form a judgment concerning the effects of the reorganization on his child's progress.

The second major change was in the form of the interview items. They were changed from open-end questions to the "yes-no" type. This was done because it was realized that, possibly, significant results of value to the Study might be obtained only through contacting a large sample. It was therefore decided to utilize both the face-to-face interview technique and the mailed questionnaire technique in the 1958-1959 assessment of parent opinion. The same items and format would be used in both the mailed questionnaire survey and the personal interview survey to facilitate comparison of results.

An additional area, which did not appear in the mailed questionnaire, was included in the face-to-face interview form. On the basis of the interview the psychologist first evaluated whether or not the parent accepted the fact that his child was mentally retarded, and then rated the parents' attitude towards the CRMD program in general as positive, neutral, ambivalent or negative.

The actual use of the revised parent interview form and the mail survey form during the 1958-1959 school year is reported in Chapter VI.

The Teacher Questionnaire on Reorganized and Non-Reorganized CRMD Plans

One of the objectives of the Study is to assess teacher reaction to the two-track (reorganized) plan. Pursuant to this end the Study decided to ask teachers of reorganized classes to contrast their teaching experiences under the reorganization with their experiences under the conventional plan. The survey of teachers in the two-track plan covered not only general teacher opinion on the effectiveness of the two plans for pupil growth, but might also provide useful data on teacher satisfaction and on various organizational matters.

In June 1957 Study psychologists conducted exploratory interviews of seven teachers and three supervisors of reorganized CRMD classes on the relative merits of the two-track (reorganized) and one-track (non-reorganized) plans. At that time the teachers interviewed had about three months experience with reorganized classes. Those interviewed were asked to state what they believed to be the advantages of each of the two plans of instruction. Respondents expressed themselves freely and at length, and were encouraged to add comments until further statements concerning the advantages of the two plans were no longer forthcoming.

On the basis of these unstructured interviews with teachers and supervisors, a two-part printed questionnaire was prepared for distribution to all teachers of reorganized classes in the experiment. The final form of the questionnaire was prepared with the assistance of one of the assistant directors and three supervisors of the Bureau for Children with Retarded Mental Development.

Part I of the Teacher Questionnaire included sixteen specific items and four overall questions regarding reorganized and non-reorganized classes. Each item stated a positive point, such as "Children learn academic skills better", and "Emotionally disturbed pupils get along better". Teachers responded by placing checks in columns to indicate for each item which plan they believed superior or to indicate "no difference" if this was their view.

Part II of this written teacher questionnaire was similar to the exploratory oral interviews in that teachers were asked to provide statements as to the advantages and disadvantages of each of the two plans.

Questionnaires were distributed to all teachers of reorganized classes in the experiment in M y, 1958. They were completed and returned anonymously. At this time most of these teachers had approximately one school year of teaching under the two-track plan, with many teachers having an additional several months during the previous school year. Those teachers who responded to the questionnaire had a mean of 10.5 months teaching experience under the two-track plan with a standard deviation of 2.1 months.

Usable completed questionnaires were returned through the mails by 38 Ed I teachers and 29 Ed II teachers. These constituted 36% of all Ed I teachers and 76% of all Ed II teachers in the experiment. Of the total of 143 teachers polled by the Study, 41% submitted usable questionnaires; and an additional 15% submitted questionnaires that were not usable because of incompleteness of data. For the reading of the remainder of this report on the Teacher Questionnaire, it should be carefully noted that 64% of the Ed I teachers in the study and 24% of the Ed II teachers are not included in the results given.

The results of this survey at the close of the first year of the experiment indicates that a majority of both Ed I and Ed II teachers favor the two-track plan over the one-track plan. Eighty-four percent of the respondents who taught Ed I classes favored the reorganization, 8% favored the conventional plan, and another 8% indicating no difference between the plans in response to the overall question, "Considering all facters, which plan do you believe can better prepare the greater majority of CRMD children to assume adult responsibilities?" The corresponding percents for the Ed II teachers were 79% in favor of the reorganized plan, 16% in favor of the non-reorganized, and 3% indicating no difference between the plans. The responses in favor of the reorganization differ significantly at beyond the 1% level of confidence from the responses in favor of the conventional plan. Even if all respondents who had indicated "no difference" had answered in favor of the non-reorganized plan, the difference between this total and the number in favor would still have been significant at beyond the 1% level of confidence. This finding applies to both Ed I and Ed II teachers.

However, this conclusion, as well as others to follow regarding the results from this questionnaire, is based on the assumption that the responding teacher sample was representative of the total group of teachers of experimental classes. In this connection, it should be noted that 76% of all Ed II teachers in the experiment responded with usable questionnaires, and that these Ed II respondents were found to be generally less in favor of the reorganization than were the Ed I teachers. In spite of this fact a significantly larger number of Ed II teachers responded in favor of the reorganization than those Ed II teachers who did not.

The overall question just dicussed referred to "the greater majority of CRMD children." As there are twice as many Ed I children than Ed II in CRMD classes, a response to this question in favor of the reorganization might not necessarily indicate that teachers believed that the two-track plan was better for the Ed II children. Opinion regarding the merits of the two plans for Ed II children is indicated by the response of Ed II teachers to the question, "Under which plan have your Ed II children made greater social and academic progress?" Seventy-six percent of the Ed II respondents answered this question in favor of the reorganization. The number of teachers in favor differed significantly, at the 1% level of confidence, from the number not favoring the reorganization.[1] Ed I respondents answered a similar question regarding Educable I pupils with 82% in favor of the reorganization.[2]

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1. The non-reorganized plan was favored on this question by 10% of Ed II respondents; "no difference" was indicated by 14%.

2. The non-reorganized plan was favored on this question by 5% of Ed I respondents; "no difference" was indicated by 13%.

Ed I and Ed II teachers differed to more than a slight degree on only one of the four overall questions: "On the whole, which plan provided you with a more satisfying teaching experience?" Seventy-four percent of Ed I respondents considered teaching a more satisfying experience under the new plan, as compared to 59% of Ed II teachers. Twenty-eight percent of Ed II teachers considered teaching under the conventional plan more satisfying, as compared to 8% of Ed I teachers.

The favorable response to the reorganization by both Ed I and Ed II teachers is confirmed by their answers to each of the specific items as well as the four overall questions. As indicated in Table XXIV each of the sixteen specific items had a greater number of Ed I and Ed II teachers favoring reorganized classes than the respective number favoring non-reorganized classes. However, it should be noted that for five of the sixteen specific items, one or the other of the two experimental groups answered "no difference" in greater number than its response favoring the reorganization. Even in these instances the percents favoring the reorganization exceeded those favoring non-reorganized classes by at least nineteen percent of all of the Ed I or Ed II teachers responding.

In spite of the clear trend in favor of the reorganization, Ed II respondents as a group expressed a greater tendency than did the Ed I respondents to favor non-reorganized classes. On fifteen of the sixteen specific items, more Ed II than Ed I teachers believed that their actual teaching experiences indicated the conventional one-track plan to be better. However, on no specific item did more than 24% of Ed II respondents favor the non-reorganized plan.

TABLE XXIV

Percents of Ed I and Ed II Teachers in the Reorganized Plan Favoring Each Plan

Item	Percents Favoring Each Plan					
	Ed I Teachers (N=38)			Ed II Teachers (N=29)		
	Reorg.	Non-Reorg.	No Diff.	Reorg.	Non-Reorg.	No Diff.
1. Children learn academic skills better.	76	8	16	59	10	31
2. Children learn manual skills better.	61	11	29	38	14	48
3. Children learn core content better	68	3	29	66	14	20
4. More friendly pupil interaction appears.	58	8	34	55	17	28
5. Children learn more social amenities from each other.	47	13	39	45	24	31
6. Emotionally disturbed children get along better	32	13	55	52	14	34
7. More children display leadership qualities . . .	47	13	39	55	17	28
8. Children demonstrate better speech and oral communication (vocabulary, diction, spontaneity)	61	3	37	62	14	24
9. More effective class lessons	84	5	11	76	10	14
10. Better organized group activities, games	55	8	37	59	17	24
11. More frequent, profitable field trips.	42	8	50	45	21	34
12. More effective instruction of small groups . . .	66	5	29	73	10	17
13. More time to devote to teaching individual children.	63	5	32	73	3	24
14. Term's plan more effectively followed.	76	3	21	48	7	45
15. Daily schedule more effectively followed	63	3	34	34	14	52
16. Parents are more satisfied with childrens' progress.	42	5	53	45	10	45
Mean %	58.81	7.13	34.06	55.31	13.50	31.19

The Analysis of Part II of the Teacher Questionnaire on Reorganized and Non-Reorganized Plans

Free-response written statements of the relative advantages of the reorganized and non-reorganized plans were provided in Part II of the Teacher Questionnaire. Of the 67 teachers who submitted usable questionnaires, 59 provided comments on Part II under the headings: Non-Reorganized Plan — Advantages and Disadvantages, and Reorganized Plan — Advantages and Disadvantages.

In the content analysis, all comments were classified as "Favorable toward the Reorganized Plan," "Favorable toward the Non-Reorganized Plan", or, as "Problems Relevant Only to the Reorganized Plan." In an initial tabulation of the number of statements per respondent, points which were listed by the same teacher twice — once as an advantage of one plan, and then again as a disadvantage of the other — were tabulated only once. An example of this would be the following two comments by the same teacher.

1. Advantage of Reorganized Plan: "Narrower range of abilities."
2. Disadvantage of Non-Reorganized Plan: "Wider range of abilities."

Either or both such comments occuring on one teacher's questionnaire would have been tabulated just once, in the category "Narrower range of abilities or intellectual capacities," and entered under the heading "Favorable toward Reorganized Plan." A total of 309 such initial tabulations were made for the 59 teacher respondents. The median number of responses was about five per teacher. Only 8 of the 59 teachers listed as few as 1 or 2 independent responses; and 8 teachers made between 9 and 13 responses each. Ed I (N= 33) and Ed II (N= 26) teachers contributed about equally toward the total of 309 independent statements made on Part II of the questionnaire (160 and 149, respectively). The essential data are presented in Table XXV.

TABLE XXV

Number of Spontaneous Statements Reported by Teachers of Experimental Classes in the Questionnaire Concerning the Relative Advantages of the Reorganized and Non-Reorganized Plans

Item	Statements by Category	Favorable toward Reorg. Plan	Favorable toward Non-Reorg. Plan
	Application of Teaching Methods		
1.	Better teacher planning and following of curriculum.	19	0
2.	More time for knowing and teaching individual child.	12	1
3.	Fewer instructional groups needed within the class	12	0
4.	More effective lessons and activities with class as a whole. . . .	7	1
5.	Progress for the more educable pupils.	5	1
6.	Greater effectiveness of overall instruction	3	1
7.	Broader course content or experiences.	1	3
	Sub-totals	59	7
	Class Placement of Pupils		
8.	Narrower range of abilities or intellectual capacities	20	0
9.	Narrower range of chronological age.	11	1
10.	Smaller class registers.	4	6
11.	Fewer pupils with emotional problems in class; or, less of a concentration.	2	4
12.	Younger pupils helped by older pupils.	0	4
13.	Narrower range of social maturity and emotional stability.	3	0
14.	Miscellaneous.	0	3
	Sub-totals	40	18

TABLE XXV (continued)

Item	Statements by Category	Favorable toward Reorg. Plan	Favorable toward Non-Reorg. Plan
	Personal and Social Development of Pupils		
15.	Better general attitude, morale, or initiative	8	6
16.	Better integration of CRMD pupils with the rest of the school.	2	6
17.	Greater pupil acceptance of self, or of CRMD placement	4	2
18.	Fewer problems concerning discipline	4	0
19.	Better teacher-pupil communication	3	0
20.	Better personal or vocational guidance	2	0
	Sub-totals	23	14
	Benefits for Ed II Pupils		
21.	Better motivation among Ed II pupils	1	12
22.	Less frustration for Ed II pupils.	11	0
23.	Ed II pupils profit from contact with Ed I pupils.	0	10
24.	Overall better instruction for Ed II pupils.	6	0
	Sub-totals	18	22
	Miscellaneous: Parents and Teachers		
25.	Better teacher morale.	0	6
26.	Parent approval.	0	3
	Sub-totals	0	9

TABLE XXV (continued)

Item	Statements by Category	Number Mentioning
	Problems Relevant Only to Reorganized Plan*	
27.	Classes not homogeneous with regard to Ed I - Ed II placement.	13
28.	Pupil transportation problems due to reorganization.	12
29.	Miscellaneous problems concerning the reorganized plan	12
30.	Coeducational classes create instructional problems.	6
31.	Too many pupil transfers during term	3
32.	Many emotionally disturbed pupils do not belong in Ed I classes.	3
33.	Pupils with physical or speech problems are grouped together	1
	Sub-totals	50

* While all of the statements categorized in this part of the table were entered by teachers under "Disadvantages" of the reorganized plan, some of them might perhaps best be regarded as comments regarding the execution of the reorganization, rather than as disadvantages of the reorganized plan. Point 27 is an example.

The number of responses actually reported in Table XXV is only 257, rather than 309, as care was taken to permit each teacher only one "vote" under each category heading. A teacher who gave as advantages of the reorganization plan "better participation in school assemblies" and "better acceptance of CRMD by non-CRMD pupils" would have been credited with only one final tabulation, under the items: "Better integration of CRMD pupils with the rest of the school."

Teacher Opinion as Indicated in Spontaneous Responses to Part II of the Teacher Questionnaire on Reorganized and Non-Reorganized CRMD Plans

The Application of Teaching Methods

Of the six major areas represented in Table XXV, the results are most clear-cut for the application of teaching methods. Independent spontaneous responses in favor of the reorganization totaled 59, while those in favor of the non-reorganized plan totaled only 7. Most of the comments in this major area covered such aspects of teaching as class lessons, small group instruction, individual instruction, and planning. By and large, most of the comments in this category might be considered as following along the lines of the more formal arguments generally advanced by those educators who favor relatively homogeneous groupings for instructional purposes. To a more limited extent, this applies also to teacher comments made under the area dealing with the class placement of pupils.

The Class Placement of Pupils

The most outstanding single point under the category for the class placement of pupils is the apparent absence of direct disapproval for the idea that class homogeneity of abilities and intellectual capacity is an educational asset. Twenty teachers cited the greater homogeneity of the new plan in this respect as an advantage, while none of the respondents specifically cited the greater heterogeneity of the old plan as an advantage. Most of the criticisms of the new plan with respect to its homogeneity of abilities and capacities were indirect, in the sense that the criticisms were limited to various results or by-products of this homogeneity.

A considerable number of comments were registered against the new plan's ostensible failure to provide homogeneous classes in many instances. Thirteen of the 59 respondents, listed this factor under "Disadvantages" of the new plan.

An examination of comments both favorable and unfavorable to the new plan indicates an agreement among respondents that the new plan is relatively more homogeneous with regard to age, as well as educability. This narrower range of chronological age among reorganized classes is commented upon favorably by 11 teachers. On the other hand, 4 teachers listed as an advantage of the old plan the greater possibility for younger pupils to be helped by older pupils. This does not necessarily indicate a disagreement among teachers with regard to more homogeneous age groupings, as the respondents were not extremely partisan in their comments: individual teachers listed rather freely the advantages of both plans.

Teachers of the higher and lower educable tracks within the new plan tended to emphasize different aspects of the new plan's apparent placement of pupils with severe emotional problems into Ed II classes. Four Ed II teachers believe that there is too great a concentration of emotionally disturbed children in their classes, and list this as a reason for favoring the non-reorganized plan. On the other hand, two Ed I teachers report that emotionally disturbed children tend to be kept out of Ed I classes and therefore list this as an advantage of the reorganized plan. Three teachers stated that emotionally disturbed pupils should be removed from their Ed I classes, as such children are too much of a problem in the higher educable track.

At the junior high level, the old plan is apparently more homogeneous than the new with regard to sex. Six of the 24 junior high teacher respondents on Part II registered negative comments about the coeducation apparently fostered by the reorganized plan at the junior high level. (See Item 30, Table XXV.)

Personal and Social Development of Pupils

Respondents' opinions regarding the advantages of the two plans for the personal and social development of pupils are represented by a total of 23 independent responses favoring the new plan, and 14 favoring the old. These figures in reality indicated a rather clear split on this point between Ed I and Ed II teachers. Of the 14 independent comments favoring the non-reorganized plan, all but one were made by Ed II teachers. Of the 23 comments favorable to the reorganization, only 5 were made by Ed II teachers.

Thus, Ed I teachers seem to prefer the new plan for such aspects as pupil attitude, initiative, morale, discipline, self-acceptance, and integration with the rest of the school. These results seem congruent with the results for Ed I teachers on the checklist for Part I, to the extent that attitude, morale and initiative are reflected in "friendly pupil interaction" and "leadership qualities."

The meaning of the results for Ed II teachers regarding the personal and social adjustment of pupils may be discussed more fruitfully in connection with the next section on the benefits for Ed II pupils.

Benefits for Ed II Pupils

As mentioned earlier, twenty-two of the twenty-nine Ed II teacher respondents favored the reorganization for Ed II pupils on Part I of the questionnaire. These twenty-nine Ed II teachers constituted 76% of all such teachers in the experiment. In considering the import of the spontaneous statements regarding Ed II pupils, priority should be given to the views expressed in Part I on the effectiveness of the new plan.

The picture of Ed II pupils under the reorganization that seems to emerge from the content analysis is one where the lower educables are less frustrated, but also more poorly motivated, displaying less initiative and suffering for lack of the aid and example that might be set by the presence of more educable pupils. With respect to overall learning, there is some small but tentative reason to believe that the new plan may be superior.

However, when this picture is combined with the much more secure knowledge from the checklist that the Ed II teachers favor the reorganization for the "greater social and academic progress" of their pupils, a picture seems to emerge where the new plan is better on an overall basis, primarily due to academic progress, but at the partial cost, at least so far, of some of the aspects of social and personal development. The overall gain for the reorganization is at the expense of the morale of a minority of Ed II teachers, with the majority finding the new plan "a more satisfying teaching experience."[1]

Problems Relevant Only to the Reorganized Plan

While all of the statements categorized under Problems were entered by teachers under "Disadvantages" of the reorganized plan, some of them might perhaps best be regarded as criticisms of the execution of the reorganization, rather than as disadvantages of the reorganized plan as compared to the non-reorganized. The comments relating to coeducation at the junior high level, the placement of emotionally disturbed children, and lack of homogeneity have been discussed previously.

One point remains which seems to be regarded as important by a reasonably large group of respondents - pupil transportation problems due to the reorganization. Twelve teachers made direct reference to transportation problems. In addition, two teachers referred to difficulties in keeping contact with parents due to their greater distance from the school.

Summary of Results of the Teacher Questionnaire on Reorganized and Non-Reorganized CRMD Plans

All teachers in the experiment were provided with questionnaires to be completed anonymously. Sixty-seven or 41% of these teachers submitted usable questionnaires, and an additional fifteen percent submitted questionnaires that were not usable because of incompleteness. Of all the Ed II teachers in the experiment, twenty-nine or 76% presented usable questionnaires. Thirty-eight or 36% of all Ed I teachers in the Study presented usable questionnaires.

On each of the overall questions provided in checklist form, both the Ed I and the Ed II teacher respondents favored the new plan. These expressions of overall opinion were supported by responses to the 16 specific checklist items. The results in favor of the new plan are statistically significant, on the assumption that the self-selection of the questionnaire respondents did not bias the results to any great extent.

For the Ed II teachers, no assumptions regarding the nature of the self-selection of respondents are necessary for interpreting the direction of their answers to two of the three overall summary questions provided them. An absolute majority of all the Study's Ed II teachers responded to these two overall questions in favor of the reorganization. This is due to the fact that 76% of all Educable II teachers under study responded to the questionnaire, with a large percent of the respondents favoring the reorganization. The two overall questions involved asked which plan better prepared the greater majority of CRMD children for adult responsibilities; and which plan made for greater social and academic progress for Ed II children. The third question asked which plan provided the more satisfactory teaching experience. The number of respondents answering in favor of the reorganization was large enough to exceed the number favoring the old plan, even if all Ed II teachers who submitted no questionnaire would have responded in favor of the old plan. The fact that some Ed II teachers responded with "no difference" prevented an absolute majority of Ed II teachers favoring the new plan for a more satisfactory teaching experience.

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[1] On the checklist, 59% of Ed II respondents answered in favor of the new plan, while 28% favored the old. Spontaneous remarks indicating morale rather directly were made by only 6 teachers, all teachers of Ed II pupils. The remarks of all 6 teachers favored the old plan, with respect to morale. See Item 25, Table XIV.

In spite of the overall results in favor of the reorganization, teacher opinion appears to indicate problems under the new plan concerning emotionally disturbed children, the lower educable children, pupil transportation, the ostensible failure of the new plan to provide homogeneous classes in many instances, and coeducation at the junior high level.

Teacher respondents were more favorably inclined toward the reorganized than toward the non-reorganized plan, although various problem areas were explicitly recognized by sub-groups among the teachers.

An absolute majority of all Ed II teachers responded in favor of the reorganization for the progress of their pupils. While the percent favoring the reorganization was even higher among Ed I teacher respondents, the relatively small percent responding (36%) makes it unsafe to generalize for all Ed I teachers in the experiment.

The possibility exists that teacher opinion at the close of the first full year of the experiment is based partly upon hopes and expectations for the new plan. If this is the case, an additional year of the experiment may be necessary to reduce the extent to which experimental teachers rely on future promise rather than experience in evaluating the reorganization.

The Supervisor Questionnaire on Reorganized and Non-Reorganized CRMD Plans

One of the objectives of the Study is to assess the reactions of the field supervisors of the Bureau for Children with Retarded Mental Development. Teacher reaction has been discussed in the previous section, and the reactions of principals is discussed in the next section.

There were a total of 13 field supervisors in the Bureau for Children with Retarded Mental Development during the 1957-1958 evaluation. These supervisors have approximately 11,000 mentally handicapped children in over 700 classes under their jurisdiction. Individual supervisors are in charge of over 50 classes, on the average, scattered over wide areas, usually with fewer than 4 classes to a school, and often with only 1.

In order to assess supervisor opinion toward the two plans only supervisors who were in charge of reorganized classes were polled. Eight of the 13 supervisors had reorganized classes under study by the project, and all eight submitted anonymous questionnaires which were given and returned in June 1958. Seven respondents reported control classes as well.[1] The Supervisor Questionnaire was similar to the Teacher Questionnaire, in that Part I was in checklist form, and Part II requested free-response statements of the advantages and disadvantages of the reorganized and non-reorganized plans.

Part I: The Checklist

Part I of the Supervisor Questionnaire included nineteen specific questions and eight overall questions regarding reorganized and non-reorganized classes. Each specific question stated a point of educational advantage, and then asked which plan, if either, had the advantage in this respect. An example of such a point of advantage is: "Children learn more social amenities from each other." Supervisors responded by placing checks in columns to indicate which plan they believed superior in helping pupils learn, or to indicate "no difference" if this was their view. Twelve of the nineteen items appeared in exactly the same wording in the Teacher Questionnaire on Reorganized and Non-Reorganized CRMD Plans.

Part I also included eight overall questions, the answers to which did not necessarily indicate an advantage for the plan chosen. An example of such a question is: "On the whole, which plan makes greater demands on the teacher's patience and understanding?" All these items are shown in Table XXVI.

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[1] Two additional supervisors had classes under study in their districts. However, these classes included only non-reorganized classes, and for this reason these two supervisors were not polled regarding the relative merits of the one-track and two-track plans.

TABLE XXVI

Number of Participating Field Supervisors Favoring Reorganized and Non-Reorganized Plans for Indicated Educational Advantages

UNDER WHICH PLAN?	Reorg.	Non-Reorg.	No Diff.	Don't know
Specific Points:				
1. 'High-Educable' children learn academic skills better.	7	0	1	0
2. 'Low-Educable' children learn academic skills better	7	0	1	0
3. 'High-Educable' children learn manual skills better.	3	0	5	0
4. 'Low-Educable' children learn manual skills better	5	0	3	0
5. 'High-Educable' children learn core content better	6	0	1	1
6. 'Low-Educable' children learn core content better.	6	0	2	0
7. More friendly pupil interaction appears.	6	0	2	0
8. Children learn more social amenities from each other	5	1	2	0
9. More children display leadership qualities	6	1	0	1
10. Emotionally disturbed children get along better.	3	2	3	0
11. Children demonstrate better speech and oral communication (vocabulary, diction, spontaneity)	8	0	0	0
12. More effective class lessons	7	0	1	0
13. Better organized group activities, games	6	0	2	0
14. More frequent, profitable field trips.	3	0	4	1
15. More effective instruction of small groups	7	0	1	0
16. Term's plan more effectively followed.	2	0	4	2
17. More teacher time available for individual instruction	7	0	1	0
18. Daily schedule more effectively followed	2	0	5	0
19. Parents are more satisfied with childrens' progress.	6	0	2	0

TABLE XXVI (continued)

UNDER WHICH PLAN?	Reorg.	Non-Reorg.	No Diff.	Don't know
Overall Questions:				
20. Under which plan have your Ed I children made greater social and academic progress?.	6	0	1	1
21. Under which plan have your Ed II children made greater social and academic progress?.	5	1	1	1
22. On the whole, which plan makes greater demands on the teacher's patience and understanding?	2	5	1	0
23. On the whole, which plan requires more of the teacher's time and ingenuity in preparing materials?	2	4	1	1
24. In your opinion, to which plan have more of the more able, enthusiastic teachers been assigned?.	2	1	1	4
25. Consider the teachers now assigned to Ed I classes: Under which plan has their morale been higher?.	5	1	2	0
26. Consider the teachers now assigned to Ed II classes: Under which plan has their morale been higher?.	1	6	1	0
27. Considering all factors, which plan do you believe can better prepare the greater majority of CRMD children to assume adult responsibilities?	7	0	1	0

The Analysis of the Checklist

On the major overall question, seven of the eight field supervisors favored the new plan, while only one favored the old plan: "Considering all factors, which plan do you believe can better prepare the greater majority of CRMD children to assume adult responsibilities?" This is item 27 given in Table XXVI.

Of the remaining six overall questions that could indicate an advantage for either of the two plans, a majority of the eight supervisors favored the new plan on all but one question. The latter question concerned teachers assigned to Ed II classes, and asked: "Under which plan has their morale been higher?" Six supervisors answered this in favor of the non-reorganized plan, one in favor of the reorganized plan and one indicated no difference.

As expressed in their answers to the overall questions the majority of supervisors felt that both Ed I and Ed II pupils benefit academically and socially under the reorganized plan. Moreover, according to the supervisors, the non-reorganized plan requires generally greater teacher time, ingenuity, patience and understanding. The sole overall disadvantage of the reorganized plan, according to the majority of the eight supervisors, is the poorer morale of teachers assigned to Ed II classes.

The generally favorable response to the reorganized plan is reflected in answers to each of the 19 specific points. On 16 of these 19 specific points, none of the field supervisors favored the one-track plan. However, a greater number of "no difference" responses than responses in favor of the reorganization appeared on the following points in Table XXVI.

3. High-Educable children learn manual skills better
14. More frequent, profitable field trips
16. Term's plan more effectively followed
18. Daily schedule more effectively followed

The greatest disagreement among the supervisors occurred on item 10: Emotionally disturbed children get along better. Three supervisors favor the two-track plan on this item, two favored the non-reorganized plan, and three indicated no difference between the two plans.

Part II: Free Response Statements

Part II of the Supervisor Questionnaire on Reorganized and Non-Reorganized CRMD Plans was identical to Part II of the Teacher Questionnaire. Written statements on the two plans were requested under the headings: Non-Reorganized Plan - Advantages and Disadvantages; and Reorganized Plan - Advantages and Disadvantages.

As with Part II of the Teacher Questionnaire, all comments were classified as "Favorable toward the Reorganized Plan", "Favorable toward the Non-Reorganized Plan", or "Problems Relevant Only to the Reorganized Plan". A total of 67 separate responses was contributed by the 8 field supervisors. These responses were grouped in six different categories and are presented in Table XXVII. A discussion of the responses by category follows.

The Application of Teaching Methods

A total of 15 non-overlapping spontaneous statements were made regarding such matters as effectiveness of instruction, teacher planning, and the implementation of the curriculum. All 15 responses were in favor of the new plan.

The Class Placement of Pupils

The field supervisors seem to accept the view that a narrower range of abilities within a class is an educational advantage. Seven supervisors made favorable spontaneous statements citing various aspects of homogeneity of grouping. However, one of these supervisors also commented that, under the one-track plan, the wide span of abilities more nearly parallels the life situation.

Other statements regarding the advantages of the reorganization mentioned the narrower ranges of chronological age and social maturity, the greater acceptance of class placement by school psychologists, the greater opportunity for vocational training provided by cluster schools,[1] and the greater opportunity for coeducational classes.

Three supervisors believed that reorganized classes often had too great a concentration of emotionally disturbed children. References were made by these three supervisors to concentrations of distractable, behavior problem, and "brain injured" children. In analyzing the Teacher Questionnaire it was found that one teacher made mention of concentrations of physically handicapped (spastic) children, as well as emotionally disturbed children. A total of four teachers cited as a disadvantage of the new plan the too great a concentration of emotionally disturbed children in Educable II classes. On the other hand, two teachers cited the removal of emotionally disturbed children from Educable I classes as an advantage of the reorganization. It would seem that either the policy of "concentrating" or that of "spreading" emotionally disturbed children is bound to engender criticism from some quarter.

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[1] The term "cluster school" refers to a school with a group of classes for mentally retarded pupils.

TABLE XXVII

Number of Spontaneous Statements Reported in the Supervisor Questionnaire Concerning Relative Advantages of the Reorganized and Non-Reorganized Plans

Item	Statements by Category	Favorable toward Reorg. Plan	Favorable toward Non-Reorg. Plan
	Application of Teaching Methods		
1.	Better teacher planning and following of curriculum.	4	0
2.	Extended possibilities for instructional groups that disregard CRMD class lines	4	0
3.	Greater effective of overall instruction	4	0
4.	Progress for the more educable pupils.	3	0
	Sub-totals	15	0
	Class Placement of Pupils		
5.	Narrower range of abilities or intellectual capacities	7	1
6.	Fewer pupils with emotional problems in class; or less of a concentration.	0	3
7.	Narrower range of chronological age.	2	0
8.	Narrower range of social maturity.	1	0
9.	Opportunity for more coeducational classes	1	0
10.	Fewer geographical obstacles to placement in CRMD classes.	0	1
11.	Greater acceptance of class placement by school psychologists.	1	0
12.	Cluster schools provided for more vocational training.	1	0
	Sub-totals	13	5

TABLE XXVII (continued)

Item	Statements by Category	Favorable toward Reorg. Plan	Favorable toward Non-Reorg. Plan
	Personal and Social Development of Pupils		
13.	Better general attitude, morale, or initiative.	1	0
14.	Greater pupil acceptance of self, or of CBMD placement.	1	0
15.	Fewer problems concerning discipline.	1	0
16.	Better teacher-pupil communication.	0	1
17.	Children remain in local environs	0	1
	Sub-totals	3	2
	Benefits for Ed II Pupils		
18.	Ed II pupils profit from contact with Ed I pupils	0	3
19.	Better motivation among Ed II pupils.	2	0
20.	Overall better instruction for Ed II pupils	2	0
	Sub-totals	4	3
	Teachers and Parents		
21.	Better teacher morale	0	4
22.	Parent approval and closer relations with school.	2	2
23.	Less demands placed upon teacher ability in handling wide ranges in instructional groups.	1	0
24.	More challenge to teacher	1	0
	Sub-totals	4	6

TABLE XXVII (continued)

Item	Statements by Category	Number Mentioning
	Problems Relevant Only to Reorganized Plan*	
25.	Pupil transportation problems due to reorganization.	4
26.	Lack of experienced teachers and teacher orientation program for Ed II classes.	3
27.	Suitable class registers should be maintained for Ed II classes.	2
28.	Administrative problems due to reorganization.	2
29.	Curriculum needs revision for Ed II pupils	1
	Sub-total	12

* While all of the statements categorized in this table were entered by supervisors under "Disadvantages" of the reorganized plan, some of them might perhaps best be regarded as criticisms of the execution of the reorganization, rather than as disadvantages of the reorganized plan as compared to the non-reorganized.

Personal and Social Development of Pupils

No clear trends regarding the personal and social development of pupils emerged from the analysis of responses in this category. This is particularly the case in view of the comments regarding emotionally disturbed pupils by Ed II teachers. However, the supervisors' responses on the checklist give evidence that they favor the organized plan for friendly pupil interaction, the learning of social amenities, and the development of pupil leadership.

Benefits for Ed II Pupils

The results from the content analysis alone are somewhat ambiguous regarding the benefits of the two plans for Ed II pupils, although the two-track plan seems to have the edge over the one-track plan. However, as indicated in Item 21, Table XXVI, five field supervisors believed the reorganization to be the better plan, while only one favored the non-reorganized plan.

Teachers and Parents

Four of the eight field supervisors made direct references to teacher morale favorable toward the non-reorganized plan. The remarks of two of these supervisors referred only to Ed II teachers. None of the supervisors made direct comments on morale favorable toward the two-track plan.

All spontaneous statements concerning morale are more clearly interpreted in the light of the more complete expression of supervisor opinion on the checklist (Table XXVI). Five of eight supervisors indicated on the checklist that they believed the morale of the Ed I teachers to be higher, and six of eight that they believed the morale of Ed II teachers to be lower, under the new plan. Thus, the free-response statements of Part II agree with the results of the checklist in that they refer primarily to teachers of the experimental low educable classes.

Supervisor opinion on the morale of Ed II teachers seems to be contradicted by questionnaire results from the Ed II teachers themselves. In response to the question on the Teacher Questionnaire: "On the whole, which plan provided you with a more satisfying teaching experience?", 59% of Ed II teachers answered in favor of the organization. Only 28% of Ed II teachers favored the one-track plan in this respect.

This contradiction may perhaps be explained by Ed II teachers' favorable response to the reorganized plan in spite of certain of the various added strains apparently placed upon them by the reorganization. Some of these added difficulties apparently faced by Ed II teachers may be gathered from these supervisor comments:

> "Lack of enthusiasm and response from Educable II pupils is very discouraging for teacher."
>
> "Need for lunch hour supervision of Educable II pupils works a hardship on Educable II teachers

> who must be with their pupils all day without a luncheon break."

At the close of the first full year of the experiment, it is possible that the Ed II teachers have tolerated their difficulties and regarded their teaching experience as more satisfying because of results achieved or expected under the reorganized plan. On the other hand, it is also possible that the field supervisors' estimates of the morale of Ed II teachers is more reflective of these teachers' morale than what the Ed II teachers are willing to admit to themselves.

While the four supervisor responses regarding parent approval and closer relations with the school were evidently divided between the two plans, the checklist showed in this respect that six supervisors favored the reorganization, none favored the non-reorganized plan, and two indicated no difference between the plans.

Problems Relevant Only to the Reorganized Plan

Of the twelve supervisor responses that were tabulated under Problems Relevant Only to the Reorganized Plan, six concerned Ed II classes, and four concerned pupil transportation problems.

The comments concerning the Ed II classes mentioned the lack of teachers with suitable experience, the lack of a suitable teacher orientation program, the occurrence of large Ed II class registers, and the need for a revision of the curriculum.

Regarding bus service[1] for reorganized pupils, two of the four supervisors who indicated problems cited the objections of parents. Two supervisors also mentioned difficulties in arranging for bus service for pupils, one supervisor stating that, "bus difficulties tend to bog down the administative end of things."

Summary of Supervisor Opinion on the Relative Strengths of the Two Plans

All of the eight field supervisors with classes in the experiment submitted usable questionnaires. Seven respondents reported both Ed I and Ed II classes in their districts, and six reported control classes as well.

Most of the supervisors believe that the morale of Ed II teachers is lower under the reorganization. Several also recognize and seem to give importance to the following as special problems under the two-track plan: a tendency to concentrate problem children, especially those with emotional problems, in Ed II classes; the need for better prepared teachers and a revised curriculum for Ed II classes; and the existence of pupil transportation problems due to the reorganization.

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[1] In many instances, the reorganization required that pupils be transported by bus from adjoining districts to schools with greater concentrations of mentally retarded pupils. The purpose of this concentration was to make possible the grouping of pupils of like educability into separate classes.

All but one of the field supervisors were generally in favor of the reorganized plan, and this one supervisor indicated "no difference" between the two plans for the preparation of "the greater majority of CRMD children to assume adult responsibilities." The aspects of the reorganization viewed most favorably concerned the class placement of pupils, and the resulting more efficient application of teaching methods for greater pupil progress.

The Principal Questionnaire on Reorganized and Non-Reorganized CRMD Plans

Another objective of the Study was to assess the reactions of school principals toward the reorganization. Principals having non-reorganized classes also participated so as to provide an adequate control. In May 1958, all of the principals involved in the Study were requested to rate the changes that occurred over the school year 1957-1958 as compared to the previous year, when the reorganization was not in operation. A five point scale which ranged from decreased a great deal to increased a great deal, was used by the principals to indicate changes in ten areas of their administrative and supervisory responsibilities.

Before the questionnaire was actually constructed, staff members spent considerable time in the field. These research psychologists were able to discuss the reorganization with many principals in informal interviews. The opinion of these workers as to what areas would most directly affect school administrators was incorporated in the questionnaire. The final form of the questionnaire included ten areas to be rated by the principals. These areas were as follows:

1. Referrals to Attendance Bureau
2. Referrals to the Bureau of Child Guidance
3. Behavior problems
4. Special bus service
5. Teacher morale
6. Teacher turnover
7. Administrative paper work
8. The consumption of supplies
9. The need for special facilities
10. Parent interviews.

In areas 1 and 2 above, two different points were considered making twelve items in all.

Sixty principals of experimental classes and seventy-nine principals of control classes were involved in the survey. Questionnaires were returned anonymously, from forty-nine experimental[1] and seventy-two control principals. These constituted 89% and 91% of the principals of schools participating in the Study.

The main results of the survey of principals' opinions are presented in Table XXVIII. This table shows the percents for each of the five degrees of change in the ten areas as reported by the participants in this survey.

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[1] Of the forty-nine principals with experimental classes, twenty-two had both Ed I and Ed II classes; twenty-one had Ed I classes only; and six had Ed II classes only.

TABLE XXVIII

Percents of Extent of Change in Ten Administrative and Supervisory Areas Reported by 49 Principals of Experimental Classes and 72 Principals of Control Classes

Area	Decreased great deal		Decreased slightly		No change		Increased slightly		Increased great deal	
	Exp	Con	Exp	Con	Exp	Con	Exp	Con	Exp	Con
1. Number of referrals to Attendance Bureau:										
a. truancy............	10%	7%	8%	6%	65%	68%	6%	17%	10%	1%
b. illegal detention by parents.........	4%	4%	6%	3%	82%	86%	4%	4%	4%	1%
2. Number of referrals to school psychologists										
a. retest for possible return to grades...	6%	4%	4%	14%	73%	58%	14%	24%	2%	0%
b. full study..........	2%	7%	4%	4%	81%	79%	8%	8%	4%	1%
3. Number of behavior problems brought to your attention on whom you keep records......	2%	6%	12%	10%	63%	58%	4%	22%	18%	4%
4. Need for special bus service...............	0%	3%	0%	0%	68%	80%	10%	11%	22%	6%
5. Morale of CRMD teachers..............	10%	1%	4%	7%	61%	74%	14%	15%	10%	3%

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TABLE XXVIII (continued)

Area	Decreased great deal		Decreased slightly		No change		Increased slightly		Increased great deal	
	Exp	Con	Exp	Con	Exp	Con	Exp	Con	Exp	Con
6. Amount of teacher turnover...............	4%	1%	0%	6%	83%	80%	6%	10%	6%	3%
7. Additional administrative paper work for office............	0%	0%	0%	1%	53%	56%	18%	21%	29%	22%
8. Consumption of supplies...............	4%	0%	0%	3%	75%	78%	10%	14%	10%	6%
9. Need for special facilities and personnel (reading, speech specialists)...........	0%	0%	2%	0%	51%	67%	29%	24%	18%	10%
10. Interview with parents of maladjusted pupils.	0%	0%	4%	7%	55%	57%	20%	31%	20%	6%

The ratings of the principals having experimental classes were compared with those of principals having control classes for each area listed in Table XXVIII. No statistically significant differences between the two groups were found for any item in the questionnaire.[1] Even on the need for special bus service which is a recognized difficulty of the reorganized plan,[2] no significant differences were found between the reactions of the two groups of principals. At no point on the five-point scale did the principals with reorganized CRMD classes differ on changes in the need for bus service by more than 16% from the principals with non-reorganized CRMD classes. No change during the 1957-1958 school year in the need for special bus service was indicated by 68% of the principals of reorganized classes returning the questionnaire.

On only three of the remaining eleven items did the principals of one plan exceed the other by 10 percent or more on the combined percents of increases or combined percents of decreases in the area in question. These three items covered the number of referrals to the Bureau of Attendance for truancy, the morale of CRMD teachers and the need for special facilities and personnel. The first two of these differences were in favor of the reorganized plan and the third difference indicates more of a need for special facilities in the reorganized plan. None of these differences was statistically significant.

In summary, although the large majority of principals of experimental and control classes submitted questionnaire (82% and 91%, respectively), no statistically significant differences were found between them in administrative and supervisory areas where the principals might be directly affected. No significant differences in change from the previous school year (1956-1957), the year before the inauguration of the reorganization, was indicated in any of the following areas covered by the questionnaire: teacher turnover, teacher morale, number of referrals to the Bureau of Attendance for truancy or illegal detention by parents, referrals to the school psychologist, recorded numbers of behavior problems, interviews with parents of maladjusted pupils, need for special facilities and personnel, consumption of supplies, administrative paper work for the office, and the need for special bus service.

The fact that the questionnaire returns reflected no statistically significant differences in changes in the need for special bus service is at variance with the comments of the CRMD supervisors on this matter. However, it should be noted that 16% more of the principals of the experimental classes, as compared to the principals of control classes, did indicated a great deal of change in the need for special bus service.

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1. The Kolmogorov-Smirnov Two Sample Test was employed.

2. Transportation of pupils has been reported as a problem by teachers and supervisors, see sections on Teacher Questionnaire and Supervisor Questionnaire.

CHAPTER VI

THE 1958-1959 EVALUATION

General Statement

The 1958-1959 evaluation represented a continuation of the 1957-1958 study; hence, the objectives and general design were essentially the same for both school years. By the beginning of the 1958 school year special tests which had been developed by the Study specifically for mentally retarded children were ready for use. These tests were used in conjunction with the 1957-1958 measures which resulted in a more comprehensive testing program for the 1958-1959 evaluation.

The Selection of the Total Sample Assigned to the Study

The same sample of classes as were selected by the Bureau CRMD for inclusion in the 1957-1958 evaluation were again studied during the 1958-1959 experiment. Reference to Chapter V will indicate the basis of selection.

Population Data

During October 1958, pupil data record forms were again filled out by all teachers involved in the study in order to update all pertinent information. Data reported within this section are based on information furnished through these second forms.

Selection of Classes for Study

In view of the changes in class composition over a time period of one year, each teacher was again asked to rate each pupil with regard to educability level. Results indicated that not all reorganized and non-reorganized classes met the Study's criteria for homogeneity and heterogeneity respectively. An explanation of these criteria is given in detail in Chapter V.

Following the analysis of teachers' classifications of the educability level of each pupil, classes were redesignated as either homogeneous experimental or heterogeneous control. These data are presented in Table XXIX.

TABLE XXIX

Number of Bureau Designated and Study Designated Experimental and Control Classes for Each Class Level

Class Level	Bureau Designated Classes	Study Designated Classes Homogeneous	Study Designated Classes Heterogeneous	Incomplete Data
Exp Ed I				
Primary	29	16	7	6
Intermediate	37	14	15	8
Junior High	41	24	11	6
Total	107	54	33	20
Exp Ed II				
Primary	15	13	0	2
Intermediate	13	10	2	1
Junior High	15	11	3	1
Total	43	34	5	4
Control				
Young	32	0	30	2
Intermediate	21	4	15	2
Older	57	20	32	5
Wide Age Range	21	18	0	3
Total	131	42	77	12

Note: Also assigned as part of the 301 classes of the Study were 12 experimental and 8 control vestibule classes. Children are assigned to vestibule classes usually because their levels of educability have not as yet been determined.

Table XXIX indicated that of the 107 classes originally assigned as experimental high educable, 54 met the standard of homogeneity and were retained for study. Of the 43 classes originally assigned as experimental low educable, 34 were considered homogeneous; of the 131 classes originally designated as control, 77 were considered heterogeneous.

Selected Characteristics of Classes Chosen for Study

A description of the experimental and control populations in terms of age, intelligence quotients, and teachers' ratings of social maturity, emotional stability and motor coordination will be presented in this section.

The chronological ages of pupils classified as to educability level by teachers in the entire sample of homogeneous experimental and heterogeneous control classes are presented in Table XXX.

TABLE XXX

Means, Standard Deviations, and Ranges of Chronological Age in Months of Pupils in Homogeneous Experimental and Heterogeneous Control Classes by Type of Class, Educability Level, and Sex as of October 1, 1958

Type of Class	Ed Level	Boys				Girls			
		N	M	σ	Range	N	M	σ	Range
Ed I (Exp)	I*	426	154.89	25.40	92-206	247	155.09	25.00	94-221
	II	61	164.28	25.97	115-200	25	146.40	26.40	102-197
	Other	18	166.67	22.84	114-202	4	155.50	26.88	57-194
Ed II (Exp)	I	11	158.64	23.59	126-191	8	166.13	16.78	132-189
	II*	217	147.46	29.08	81-206	164	144.11	35.33	81-205
	Other	18	161.22	24.67	109-204	6	154.67	27.15	121-189
Control	I*	275	157.40	24.22	98-215	317	161.90	22.94	87-209
	II*	260	153.44	25.91	96-215	225	158.41	26.61	84-208
	Other	33	164.52	30.07	107-201	22	169.23	24.15	105-202

*See text below

The means that are of chief interest in Table XXX are those of high educable pupils in Ed I classes, low educable pupils in Ed II classes, and the corresponding means of high and low educable pupils in the control classes. These means appear in rows marked with asterisks in the above table. Most of the analyses to be presented involved a comparison of Ed I pupils in experimental Ed I classes with Ed I pupils in control classes. Similarly, Ed II pupils in the experimental Ed II classes were compared with Ed II pupils in control classes.

Table XXX indicates that experimental boys and girls, Ed I and Ed II groups are consistently younger than their control counterparts.

Statistical data on the intelligence quotient of experimental and control pupils according to class, sex, and educability level are presented in Table XXXI.

TABLE XXXI

Means, Standard Deviations, and Ranges of Intelligence Quotients of Pupils in Homogeneous Experimental and Heterogeneous Control Classes by Type of Class, Educability Level, and Sex

Type of Class	Ed Level	Boys				Girls			
		N	M	σ	Range	N	M	σ	Range
Ed I (Exp)	I*	415	69.06	6.55	50-75	244	67.61	5.43	50-75
	II	60	65.72	6.49	50-75	23	66.09	6.28	53-75
	Other	18	68.72	4.94	53-75	3	66.67	6.72	57-72
Ed II (Exp)	I	11	63.55	7.96	50-73	8	64.88	8.66	50-72
	II*	215	61.79	9.61	50-75	150	58.87	6.65	50-75
	Other	16	64.06	12.77	56-75	5	55.80	3.92	50-60
Control	I*	271	68.47	5.89	50-75	316	66.77	6.22	50-75
	II*	247	64.15	6.14	50-75	224	61.33	6.96	50-75
	Other	33	64.88	7.41	50-75	20	61.30	6.87	50-75

*Denotes groups from which samples were drawn for comparisons

Examination of Table XXXI indicates that the mean intelligence quotient of Ed I experimental boys is .59 points higher than that of their control counterparts while the mean I.Q. of experimental Ed II boys is 2.36 points lower than that of Ed II control boys. Within the girls' groups it is evident that the Ed I experimental pupils achieved a mean intelligence quotient which was .84 points higher than their control counterparts while the Ed II control girls were 2.46 points higher than the mean I.Q. of experimental Ed II girls.

Table XXXI also reveals that the mean intelligence quotients of Ed I boys and girls in both experimental and control groups are consistently higher than those of Ed II pupils in each type of class. No such consistency or pattern may be derived from comparisons of pupils rated as "other" with Ed I and Ed II pupils in each type of class.

Results based on teachers' ratings of emotional stability of pupils are presented in Table XXXII. The five point rating scale used included the following descriptions of emotional stability: poor, fair, average or good, very good, and excellent.

TABLE XXXII

Means, Standard Deviations, and Ranges of Teachers' Ratings of Emotional Stability of Pupils in Homogeneous Experimental and Heterogeneous Control Classes by Type of Class, Educability Level, and Sex as of October 1, 1958

Type of Class	Ed Level	Boys N	Boys M	Boys σ	Boys Range	Girls N	Girls M	Girls σ	Girls Range
Ed I (Exp)	I*	428	3.30	.96	1-5	241	3.27	.97	1-5
	II	61	2.85	1.04	1-5	25	2.68	1.01	1-5
	Other	16	1.81	.75	1-4	4	2.50	1.50	1-5
Ed II (Exp)	I	9	3.56	1.05	1-5	8	4.25	.85	1-5
	II*	217	2.36	1.17	1-5	164	2.38	1.02	1-5
	Other	16	2.19	.87	1-3	3	2.40	1.20	1-5
Control	I*	267	3.10	.98	1-5	317	3.57	1.02	1-5
	II*	254	2.48	1.04	1-5	229	2.82	.98	1-5
	Other	32	2.19	1.20	1-5	46	1.30	1.31	1-5

*Denotes groups from which samples were drawn for comparison

Table XXXII reveals that Ed I experimental and control pupils received a consistently higher mean rating in emotional stability than did the Ed II pupils. There is a consistently higher mean rating of emotional stability for all Ed I pupils as compared to all Ed II pupils. Further, as in the 1957-1958 analysis, there is a marked tendency for pupils classified as "other" to receive mean ratings below those of Ed II pupils. Both educability levels achieved the full range of ratings, namely 1 to 5.

Table XXXIII contains the results of social maturity ratings for experimental and control pupils. Teachers again rated according to a five point scale ranging from poor to excellent.

TABLE XXXIII

Means, Standard Deviations, and Ranges of Teachers' Ratings of Social Maturity of Pupils in Homogeneous Experimental and Heterogeneous Control Classes by Type of Class, Educability Level, and Sex as of October 1, 1958

Type of Class	Ed Level	Boys				Girls			
		N	M	σ	Range	N	M	σ	Range
Ed I (Exp)	I*	427	3.29	.95	1-5	241	3.30	.97	1-5
	II	61	2.77	1.14	1-5	25	3.00	1.02	1-5
	Other	16	1.94	.70	1-3	4	2.50	1.50	1-5
Ed II (Exp)	I	9	3.56	1.20	2-5	8	4.25	.83	3-5
	II*	217	2.37	.95	1-5	164	2.42	1.09	1-5
	Other	16	2.06	1.10	1-4	5	2.40	1.20	1-4
Control	I*	267	3.25	.96	1-5	318	3.67	.98	1-5
	II*	255	2.47	.99	1-5	229	2.87	1.00	1-5
	Other	32	2.28	1.13	1-5	52	2.60	1.50	1-5

*Denotes groups from which samples were drawn for comparison

Table XXXIII reveals a consistent descending order of mean social maturity ratings within all types of classes. The Ed I pupils received the highest mean rating while the Ed II pupils received an intermediate mean rating and the "other" pupils received the lowest mean rating in each type of class.

Teachers were asked to rate each pupil on motor coordination using the average "normal" child of any given chronological age as a point of reference. The following five point scale was used:

1	2	3	4	5
Very Poor	Poor	Average for C.A.	Good	Very Good

The means and related statistical information of the teachers' ratings of motor coordination are presented in Table XXXIV.

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TABLE XXXIV

Means, Standard Deviations, and Ranges of Teachers' Ratings of Motor Coordination of Pupils in Homogeneous Experimental and Heterogeneous Control Classes by Type of Class, Educability Level, and Sex as of October 1, 1958

Type of Class	Ed Level	Boys				Girls			
		N	M	σ	Range	N	M	σ	Range
Ed I (Exp)	I*	415	3.37	.91	1-5	240	3.27	.86	1-5
	II	62	2.66	.93	1-4	31	2.13	1.18	1-5
	Other	58	3.41	.98	1-5	4	3.00	.71	1-4
Ed II (Exp)	I	10	3.80	.87	1-5	8	3.88	.91	1-5
	II*	216	2.71	.93	1-5	163	2.78	1.02	1-5
	Other	15	2.53	1.15	1-5	5	2.20	1.16	1-5
Control	I*	269	3.47	.94	1-5	307	3.65	.85	2-5
	II*	253	2.80	.96	1-5	222	2.79	.94	1-4
	Other	33	2.52	1.17	1-5	21	2.57	1.22	1-4

*See text below

The rows indicated by asterisks in Table XXXIV identify the statistics for the groups from which samples were drawn for comparison of the two plans of instruction.

Table XXXIV indicates that the Ed I pupils in both experimental and control classes achieved consistently higher mean ratings of motor coordination than did any of the Ed II pupils. With both the Ed II experimental groups and the control groups a descending order of mean ratings in favor of Ed I pupils may be observed. Within the Ed I experimental classes, however, it was observed that "other" boys received a higher mean rating than either Ed I or Ed II boys, and "other" girls achieved a mean motor coordination rating which was higher than the Ed II girls' and lower than the Ed I girls'.

Results in the Various Areas Under Study

The one-track and two-track plans were compared for growth during the 1958-1959 year in the areas of academic achievement, motor coordination, speech, personal and social adjustment, pupils attitudes, activities and interests. Teachers, supervisors, and parents contributed to the evaluation.

Academic Achievement

The Metropolitan Achievement Test and The New York Reading Readiness Test

The Metropolitan Achievement Test was again employed to assess pupil growth in the areas of arithmetic and reading. The New York Reading Readiness Test was used to measure the progress of the pre-reader population.

In October 1958, each teacher was asked to select and administer. as initial measures, the level of the Metropolitan Test, Form S which was most appropriate for measuring the reading and arithmetical achievement of her class. In the case of pre-readers, teachers used the New York Reading Readiness Test, Form A.

In May-June 1958, in order to obtain final measures which could be compared with initial scores, the Study requested each teacher to administer an alternate form of the same test. Final measures were derived from Form T of the Metropolitan Achievement Test, and Form B of the New York Reading Readiness Test.

Pupils were matched on the variables of sex, age, I.Q., educability level, emotional stability, and social maturity. Matched pairs were then compared on progress in the areas of arithmetic and reading. Separate analyses were done for each level of the test. Pre-reader pairs were compared with respect to growth in reading readiness.

Table XXXV presents the equation data for matched pairs at each test level.

TABLE XXXV

Means, Standard Deviations, and Significance of the Differences Between the Means of Matching Variables of Four Sub-Groups for the Analysis of Growth in Reading and Arithmetic for the Indicated Number of Experimental and Control Matched Pairs

Test	Matching Variable	Group	N	Boys		Girls		M	σ	Mean Diff. Exp - Con	t	P
				Ed I	Ed II	Ed I	Ed II					
N.Y. Reading Readiness	Age	Exp	28	2	13	1	12	121.64	18.46	-.97	.20	.90-.80
		Con	28	2	13	1	12	122.61	17.49			
	I.Q.	Exp	28	2	13	1	12	62.86	7.17	.04	.02	1.00-.90
		Con	28	2	13	1	12	62.82	7.60			
	Social Maturity	Exp	28	2	13	1	12	2.29	.95	0	0	1.00
		Con	28	2	13	1	12	2.29	.91			
	Emotional Stability	Exp	28	2	13	1	12	2.29	.99	.04	.14	.90-.80
		Con	28	2	13	1	12	2.25	1.06			
Metropolitan Primary I	Age	Exp	118	30	32	31	25	144.18	21.34	-.32	.11	1.00-.90
		Con	118	30	32	31	25	144.50	21.67			
	I.Q.	Exp	118	30	32	31	25	65.74	6.55	-.15	.17	.90-.80
		Con	118	30	32	31	25	65.89	6.54			
	Social Maturity	Exp	118	30	32	31	25	2.95	.90	.07	.54	.60-.50
		Con	118	30	32	31	25	2.88	1.10			
	Emotional Stability	Exp	118	30	32	31	25	2.97	.84	.17	1.31	.20-.10
		Con	118	30	32	31	25	2.80	1.05			

TABLE XXXV (continued)

Test	Matching Variable	Group	N	Boys Ed I	Boys Ed II	Girls Ed I	Girls Ed II	M	σ	Mean Diff. Exp - Con	t	P
Metropolitan Primary II	Age	Exp	76	35	4	26	5	157.05	17.37	.91	.31	.80-.70
		Con	76	35	4	26	5	156.14	18.48			
	I.Q.	Exp	76	35	4	26	5	67.12	6.17	.25	1.01	.40-.30
		Con	76	35	4	26	5	66.87	6.15			
	Social Maturity	Exp	76	35	4	26	5	3.12	.95	-.12	.80	.50-.40
		Con	76	35	4	26	5	3.24	.87			
	Emotional Stability	Exp	76	35	4	26	5	3.14	.90	.09	.64	.60-.50
		Con	76	35	4	26	5	3.05	.87			
Metropolitan Elementary	Age	Exp	61	28	0	33	0	174.82	12.31	.90	.40	.70-.60
		Con	61	28	0	33	0	173.92	12.59			
	I.Q.	Exp	61	28	0	33	0	67.67	5.93	.62	.58	.60-.50
		Con	61	28	0	33	0	67.05	5.66			
	Social Maturity	Exp	61	28	0	33	0	3.74	.82	-.05	.31	.80-.70
		Con	61	28	0	33	0	3.79	.85			
	Emotional Stability	Exp	61	28	0	33	0	3.66	.94	-.08	.44	.70-.60
		Con	61	28	0	33	0	3.74	.98			

As indicated in Table XXXV there were no significant differences between experimental and control pupils on any of the matching variables. Groups were also equated on the proportion of children from homes in which a foreign language is spoken. These data are as follows:

Group	Test	Percents of Homes with Foreign Language
Experimental	Readiness	25
Control	Readiness	29
Experimental	Elementary	30
Control	Elementary	33
Experimental	Primary I	36
Control	Primary I	36
Experimental	Primary II	32
Control	Primary II	32

None of the percent differences between any of the above pairs was statistically significant which indicates that the groups were equated on this variable.

Differences in initial scores on both the Metropolitan Achievement Tests and the New York Reading Readiness Test were statistically controlled through the use of the analysis of covariance technique in comparing final scores.

Results of the analysis of covariance performed on reading scores are presented in Table XXXVI.

TABLE XXXVI

Results of the Analysis of Covariance of New York Reading Readiness and Metropolitan Reading Test Grade Scores Between Matched Pairs of Experimental and Control Pupils

Group	N	Initial		Final		F
		M	σ	M	σ	
			Reading Readiness[1]			
Exp	28	29.50	9.97	36.61	7.48	— (n.s.)
Con	28	35.00	10.46	39.54	4.26	
			Primary I			
Exp	118	1.88	.53	2.11	.57	5.35*
Con	118	1.97	.56	2.32	.71	
			Primary II			
Exp	76	2.69	.75	2.84	.69	5.83*
Con	76	2.92	.77	3.18	.77	
			Elementary			
Exp	61	3.94	.83	4.18	.96	— (n.s.)
Con	61	3.80	.96	4.01	.92	

1. Reading readiness scores are in percentiles. All other scores are grade level scores on the Metropolitan Achievement Test.

*Significant at the 5% level of confidence or less

The results of the analysis of covariance performed on arithmetic test scores are presented in Table XXXVII. Non-readers are not included in these data since appropriate measures of arithmetical achievement were not available for this group.

TABLE XXXVII

Results of the Analysis of Covariance of Metropolitan Arithmetic Test Grade Scores Between Matched Pairs of Experimental and Control Pupils

Group	N	Initial		Final		F
		M	σ	M	σ	
			Primary I			
Exp	118	2.23	.76	2.60	.89	
Con	118	2.42	.77	2.82	.91	– (n.s.)
			Primary II			
Exp	76	3.22	.60	3.72	.94	
Con	76	3.28	.65	3.91	.95	1.55 (n.s.)
			Elementary			
Exp	61	4.32	.82	4.70	.80	
Con	61	4.45	.69	4.78	.74	– (n.s.)

Examination of Table XXXVII indicates that there were no significant differences in the arithmetic achievement of experimental and control pupils at any level. All groups exhibited gains from initial to final arithmetic test scores.

The Wide Range Test of Reading Achievement

In addition to the Metropolitan Reading Tests, the Wide Range Test of Reading Achievement, a measure specifically designed for retardates, was used to assess progress in reading. The latter test was administered initially and finally in October, 1958 and June, 1959 respectively. Experimental and control pupils were matched on the variables of sex, age, intelligence quotient, social maturity, emotional stability and educability prior to any comparisons.

Equation data on the matched pairs are presented in Table XXXVIII.

TABLE XXXVIII

Means, Standard Deviations and the Significance of the Differences Between the Means of Four Groups of Matched Experimental and Control Pupils on the Wide Range Test of Reading Achievement

Sex	Ed Level	Variable	Group	N	M	σ	Mean Diff. Exp - Con	t	P
Boys	I	Age	Exp Con	102 102	155.62 155.50	20.50 20.27	.12	.04	1.00-.90
		I.Q.	Exp Con	102 102	69.09 68.53	4.38 4.90	.56	.85	.40-.30
		Social Maturity	Exp Con	102 102	3.35 3.23	.86 .92	.12	1.01	.40-.30
		Emotional Stability	Exp Con	102 102	3.31 3.13	.91 .91	.18	1.46	.20-.10
Girls	I	Age	Exp Con	109 109	152.69 152.42	21.87 21.96	.27	.09	1.00-.90
		I.Q.	Exp Con	109 109	67.62 67.24	5.18 5.44	.38	.53	.60-.50
		Social Maturity	Exp Con	109 109	3.26 3.49	1.01 .95	-.23	1.72	.10-.05
		Emotional Stability	Exp Con	109 109	3.29 3.38	1.02 .95	-.09	.62	.60-.50

TABLE XXXVIII (continued)

Sex	Ed Level	Variable	Group	N	M	σ	Mean Diff. Exp - Con	t	P
Boys	II	Age	Exp	39	151.44	24.80	.16	.03	1.00-.90
			Con	39	151.28	25.13			
		I.Q.	Exp	39	63.49	7.72	.11	.06	1.00-.90
			Con	39	63.38	7.38			
		Social Maturity	Exp	39	2.38	.80	.07	.35	.80-.70
			Con	39	2.31	1.09			
		Emotional Stability	Exp	39	2.33	.94	-.08	.33	.80-.70
			Con	39	2.41	1.10			
Girls	II	Age	Exp	44	156.11	25.36	.54	.10	1.00-.90
			Con	44	155.57	25.31			
		I.Q.	Exp	44	59.95	6.40	-.57	.41	.70-.60
			Con	44	60.52	6.50			
		Social Maturity	Exp	44	2.66	1.08	-.43	1.95	.10-.05
			Con	44	3.09	.97			
		Emotional Stability	Exp	44	2.60	.94	-.40	1.90	.10-.05
			Con	44	3.00	1.02			

Table XXXVIII indicates that there are no significant differences between experimental and control groups on any of the matching variables. Groups were equated with regard to the proportion of children from homes in which a foreign language is spoken. The proportion of such children in each group is as follows:

Group	Percents of Homes with Foreign Language
Exp Ed I Boys	22
Con Ed I Boys	22
Exp Ed I Girls	37
Con Ed I Girls	35
Exp Ed II Boys	26
Con Ed II Boys	26
Exp Ed II Girls	27
Con Ed II Girls	27

Statistical analysis revealed that the difference between experimental and control Ed I girls was not significant.

In comparing final reading scores, the differences in initial reading scores were statistically controlled by the analysis of covariance technique. Results of this analysis are presented in Table XXXIX.

TABLE XXXIX

Results of the Analysis of Covariance of the Wide Range Test of Reading Achievement Scores Between Matched Pairs of Experimental and Control Pupils

Group	Sex	Ed Level	N	Initial		Final		F
				M	σ	M	σ	
Exp	M	I	102	78.29	25.57	85.33	24.47	- (n.s.)
Con	M	I	102	76.80	24.06	85.34	20.97	
Exp	F	I	109	75.94	24.68	82.60	22.83	1.68 (n.s.)
Con	F	I	109	83.06	22.71	90.47	19.97	
Exp	M	II	39	48.64	15.76	58.23	17.49	- (n.s.)
Con	M	II	39	55.41	22.81	64.95	22.18	
Exp	F	II	44	49.52	23.80	63.05	23.51	1.02 (n.s.)
Con	F	II	44	58.27	23.10	68.14	21.52	

Examination of Table XXXIX reveals that there were no significant differences in wide range reading achievement scores between matched experimental and control groups of either sex or educability level. All groups manifested an increase from initial to final scores.

The Extended Range Test of Readiness for Reading

The reading progress of "non-readers" was assessed by means of the Extended Range Test of Readiness for Reading. This test was administered in October 1958 initially and again in June 1959.

Experimental and control non-reader pupils were matched on the same variables as those used in the reading achievement analysis. Equation data on these groups are presented in Table XL.

TABLE XL

Means, Standard Deviations, and the Significance of the Differences Between the Means of Two Groups of Matched Experimental and Control Pupils on the Extended Range Test of Readiness for Reading

Sex	Ed Level	Variable	Group	N	M	σ	Mean Diff. Exp - Con	t	P
Boys	II	Age	Exp Con	38 38	138.79 138.74	22.49 22.44	.05	.01	1.00-.90
		I.Q.	Exp Con	38 38	61.34 61.68	7.10 6.48	-.34	.22	.90-.80
		Social Maturity	Exp Con	38 38	2.39 2.32	.71 1.26	.07	.05	1.00-.90
		Emotional Stability	Exp Con	38 38	2.50 2.45	1.07 1.06	.05	.20	.90-.80
Girls	II	Age	Exp Con	20 20	136.00 135.45	20.92 20.72	.55	.07	1.00-.90
		I.Q.	Exp Con	20 20	58.50 58.15	5.36 6.23	.35	.21	.90-.80
		Social Maturity	Exp Con	20 20	2.10 2.05	1.14 .97	.05	.15	.90-.80
		Emotional Stability	Exp Con	20 20	2.10 2.05	1.04 1.02	.05	.15	.90-.80

As indicated in Table XL there were no significant differences between experimental and control groups on any of the matching variables. These matched groups were also equated on the proportion of children from homes in which a foreign language is spoken as follows:

Group	Percents of Homes with Foreign Language
Exp Ed II Boys	32
Con Ed II Boys	32
Exp Ed II Girls	25
Con Ed II Girls	30

Statistical analysis revealed that the difference in proportions between experimental and control Ed II girls was not significant.

The absence of Ed I groups in Table XL is due to the fact that almost all Ed I pupils are able to read, hence very few took the reading readiness test.

The analysis of covariance technique employed in the comparison of reading readiness progress between experimental and control pairs, effected a statistical control on differences between groups in initial reading readiness scores. Results of final comparisons are presented in Table XLI.

TABLE XLI

Results of Analysis of Covariance of the Extended Range Test of Readiness for Reading Scores Between Matched Pairs of Experimental and Control Pupils

Group	Sex	Ed Level	N	Initial		Final		F
				M	σ	M	σ	
Exp	M	II	38	27.05	10.25	33.18	8.86	(n.s.)
Con	M	II	38	29.08	5.96	33.50	5.76	
Exp	F	II	20	25.60	11.14	28.00	12.14	2.47 (n.s.)
Con	F	II	20	27.05	8.54	32.45	9.37	

Table XLI indicates that there were no significant differences between experimental and control groups in reading readiness progress.

The Wide Range Test of Mathematical Concepts

In order to assess growth in the development of mathematical concepts during the school year 1958-1959, the study-developed Wide Range Test of Mathematical Concepts was administered to all pupils. Form A of this test was administered in October 1958, and Form B in June 1959.

As in previous analyses, experimental and control pupils were matched on sex, educability, chronological age, intelligence quotient, and teachers' ratings of social maturity and emotional stability. In addition, the two compared groups were equated on the proportion of children who come from homes where a foreign language is spoken. Analysis of covariance was employed to control for group differences in initial score on the mathematical concepts test. Separate analyses were completed for high educable boys, low educable boys, high educable girls and low educable girls. Table XLII presents the equation data for this analysis.

TABLE XLII

Means, Standard Deviations, and Significance of the Differences Between the Means of Matching Variables of Four Sub-Groups for the Analysis of Growth on The Wide Range Test of Mathematical Concepts for the Indicated Number of Experimental and Control Matched Pairs

Sex	Ed Level	Variable	Group	N	M	σ	Mean Diff. Exp - Con	t	P
Boys	I	Age	Exp	123	153.07	23.93	.16	.05	1.00-.90
			Con	123	152.91	23.98			
		I.Q.	Exp	123	69.26	4.63	.37	.65	.60-.50
			Con	123	68.89	4.34			
		Social Maturity	Exp	123	3.17	.86	-.09	.78	.50-.40
			Con	123	3.26	.98			
		Emotional Stability	Exp	123	3.25	.92	.18	1.49	.20-.10
			Con	123	3.07	.95			
Girls	I	Age	Exp	130	152.27	20.54	.14	.05	1.00-.90
			Con	130	152.13	23.10			
		I.Q.	Exp	130	66.85	5.42	.24	.36	.80-.70
			Con	130	66.61	5.36			
		Social Maturity	Exp	130	3.34	.93	-.19	1.59	.20-.10
			Con	130	3.53	1.02			
		Emotional Stability	Exp	130	3.32	1.00	-.10	.80	.50-.40
			Con	130	3.42	1.14			

TABLE XLII (continued)

Sex	Ed Level	Variable	Group	N	M	σ	Mean Diff. Exp - Con	t	P
Boys	II	Age	Exp	93	149.26	24.63	.06	.02	1.00-.90
			Con	93	149.20	24.45			
		I.Q.	Exp	93	62.10	7.58	-.09	.08	1.00-.90
			Con	93	62.19	7.29			
		Social Maturity	Exp	93	2.51	.92	.25	1.79	.10-.05
			Con	93	2.26	.88			
		Emotional Stability	Exp	93	2.60	.98	.27	1.93	.10-.05
			Con	93	2.33	.93			
Girls	II	Age	Exp	78	147.31	28.18	.08	.02	1.00-.90
			Con	78	147.23	24.08			
		I.Q.	Exp	78	59.73	6.26	-.59	.58	.60-.50
			Con	78	60.32	6.48			
		Social Maturity	Exp	78	2.46	1.05	-.25	1.39	.20-.10
			Con	78	2.71	1.12			
		Emotional Stability	Exp	78	2.50	1.11	-.29	1.68	.10-.05
			Con	78	2.79	1.08			

As indicated in Table XLII, the four matched groups of experimental and control pupils were equated on chronological age, intelligence quotient, and teachers ratings of social maturity and emotional stability.

In addition to the variables used in matching the experimental and control groups were also equated on the percent of homes in each in which a foreign language is spoken. The results of this analysis are as follows:

Group	Percents of Homes with Foreign Language
Exp Ed I Boys	25
Con Ed I Boys	25
Exp Ed I Girls	39
Con Ed I Girls	40
Exp Ed II Boys	32
Con Ed II Boys	34
Exp Ed II Girls	37
Con Ed II Girls	40

None of the differences between the percents of the compared groups is statistically significant.

The results of the analyses of the final mathematical concepts scores, which controlled for differences in initial scores through the analysis of covariance are presented in Table XLIII.

TABLE XLIII

Results of the Analysis of Covariance of the Wide Range Test of Mathematical Concepts Scores of Matched Pairs of Experimental and Control Pupils

Group	Sex	Ed Level	N	Initial		Final		F
				M	σ	M	σ	
Exp	M	I	123	20.53	6.68	22.67	6.02	– (n.s.)
Con	M	I	123	20.58	7.78	22.57	7.56	
Exp	F	I	130	18.66	6.22	20.92	6.23	1.36 (n.s.)
Con	F	I	130	20.26	6.56	22.73	6.61	
Exp	M	II	93	12.61	6.41	14.58	7.09	4.73*
Con	M	II	93	14.73	5.96	17.19	6.48	
Exp	F	II	78	10.09	5.70	12.53	6.12	– (n.s.)
Con	F	II	78	12.86	6.20	15.87	7.58	

*Significant at the 5% level of confidence or less

As indicated in Table XLIII the only significant difference was found between the matched pairs of Ed II Boys. This differences was in favor of the control group. It appears that on the average the low educable control pupils were superior to the experimental pupils on mathematical concepts.

The New York City Core Achievement Test

In order to evaluate growth in the area of core knowledge, the New York City Core Achievement Test was administered to all pupils in the experimental and control groups in October 1958, and again in June 1959.

Pupils who were being instructed with the curriculum for Cores 1 through 4 were tested with the Primary Form, and pupils who were being instructed in Cores 5 through 8 were given the Advanced Form-Parts I and II.

Experimental and control pupils were matched on chronological age, intelligence quotient and teachers' rating of social maturity and emotional stability. Subsequent to the matching, the groups of pupils were equated on the proportion of pupils who came from homes in which a foreign language is spoken.

Table XLIV presents the matching data for all pupils who were administered the Primary Core series.

TABLE XLIV

Means, Standard Deviations, and Significance of the Differences Between the Means of Matching Variables of Four Sub-Groups for the Analysis of Growth in Achievement in the Primary Core Series for the Indicated Number of Experimental and Control Matched Pairs

Sex	Ed Level	Variable	Group	N	M	σ	Mean Diff. Exp - Con	t	P
Boys	I	Age	Exp	68	133.26	18.12	.23	.62	.60-.50
			Con	68	133.03	18.10			
		I.Q.	Exp	68	69.24	4.61	-.02	.02	1.00-.90
			Con	68	69.26	4.86			
		Social Maturity	Exp	68	3.26	.72	.19	1.27	.30-.20
			Con	68	3.07	1.02			
		Emotional Stability	Exp	68	3.12	.86	.25	1.47	.20-.10
			Con	68	2.87	1.05			
Girls	I	Age	Exp	65	138.74	15.94	.29	.10	1.00-.90
			Con	65	138.45	16.94			
		I.Q.	Exp	65	67.98	4.87	-.10	.04	1.00-.90
			Con	65	68.08	5.23			
		Social Maturity	Exp	65	3.12	.83	-.31	.56	.60-.50
			Con	65	3.43	1.04			
		Emotional Stability	Exp	65	3.12	.88	-.17	.34	.80-.70
			Con	65	3.29	1.00			

TABLE XLIV (continued)

Sex	Ed Level	Variable	Group	N	M	σ	Mean Diff. Exp - Con	t	F
Boys	II	Age	Exp Con	58 58	134.90 134.71	18.11 17.80	.19	.06	1.00-.90
		I.Q.	Exp Con	58 58	62.84 63.14	8.12 5.30	-.30	.23	.90-.80
		Social Maturity	Exp Con	58 58	2.12 2.34	.77 1.09	-.22	1.29	.20-.10
		Emotional Stability	Exp Con	58 58	2.19 2.34	.89 1.03	-.15	.88	.40-.30
Girls	II	Age	Exp Con	49 49	133.33 134.16	22.41 21.66	-.83	.18	.90-.80
		I.Q.	Exp Con	49 49	61.10 61.73	6.22 6.92	-.63	.47	.70-.60
		Social Maturity	Exp Con	49 49	2.22 2.51	1.08 1.20	-.29	1.21	.30-.20
		Emotional Stability	Exp Con	49 49	2.24 2.69	1.10 1.50	-.45	.21	.90-.80

As indicated in Table XLIV the four sub-groups of matched experimental and control pupils were equated on chronological age, intelligence quotient, and teacher ratings of social maturity and emotional stability, in addition to sex and educability level.

The data on the equation of the percent of pupils in the matched groups who came from homes where a foreign language is spoken are as follows:

Group	Percents of Homes with Foreign Language
Exp Ed I Boys	18
Con Ed I Boys	21
Exp Ed I Girls	29
Con Ed I Girls	29
Exp Ed II Boys	31
Con Ed II Boys	31
Exp Ed II Girls	24
Con Ed II Girls	24

The differences between the percents of homes in which a foreign language is spoken for the experimental Ed I boys and the control Ed I boys was not statistically significant. The other groups compared showed no differences in these percents.

The results of the analysis of covariance of the Primary Core Series scores are presented in Table XLV.

TABLE XLV

Results of the Analysis of Covariance of the New York City Core Achievement Test, Primary Series for Matched Pairs of Experimental and Control Pupils

Group	Sex	Ed Level	N	Initial		Final		F
				M	σ	M	σ	
Exp	M	I	68	35.21	6.72	37.81	5.81	(n.s.)
Con	M	I	68	34.47	7.38	37.19	7.17	
Exp	F	I	65	33.86	6.78	37.05	6.96	2.65
Con	F	I	65	35.60	6.82	39.34	5.14	(n.s.)
Exp	M	II	58	29.31	8.23	32.77	7.36	-
Con	M	II	58	31.39	7.13	34.25	7.38	(n.s.)
Exp	F	II	49	26.02	7.46	28.96	7.76	-
Con	F	II	49	26.83	8.11	30.57	9.18	(n.s.)

The analysis of the data in Table XLV revealed that none of the differences between experimental and control pupils was statistically significant.

Table XLVI presents the matching data for pupils who were administered the New York City Core Achievement Test, Advanced Series.

TABLE XLVI

Means, Standard Deviations, and Significance of the Differences Between the Means of Matching Variables of Four Sub-Groups for the Analysis of Growth on the Advanced Core Series for the Indicated Number of Experimental and Control Matched Pairs

Sex	[illegible] Level	Variable	Group	N	M	σ	Mean Diff. Exp - Con	t	P
Boys	I	Age	Exp Con	36 36	171.00 170.47	7.89 9.39	.53	.26	.80-.70
		I.Q.	Exp Con	36 36	69.53 68.89	4.70 5.08	.64	.55	.60-.50
		Social Maturity	Exp Con	36 36	3.14 3.39	.82 .89	-.25	1.19	.30-.20
		Emotional Stability	Exp Con	36 36	3.17 3.25	.88 .93	-.08	.36	.80-.70
Girls	I	Age	Exp Con	23 23	175.69 175.52	6.15 5.33	.17	.05	1.00-.90
		I.Q.	Exp Con	23 23	64.65 64.78	5.69 3.85	-.13	.06	1.00-.90
		Social Maturity	Exp Con	23 23	3.60 4.04	1.16 .77	-.44	1.51	.20-.10
		Emotional Stability	Exp Con	23 23	3.39 3.95	1.10 .89	-.56	1.87	.10-.05

TABLE XLVI (continued)

Sex	Ed Level	Variable	Group	N	M	σ	Mean Diff. Exp - Con	t	P
Boys	II	Age	Exp Con	18 18	175.78 177.44	7.96 8.92	-1.66	.57	.60-.50
		I.Q.	Exp Con	18 18	59.17 60.17	5.87 5.42	-1.00	.52	.60
		Social Maturity	Exp Con	18 18	2.67 2.50	.74 .90	.17	.71	.50-.40
		Emotional Stability	Exp Con	18 18	2.89 2.56	.93 1.01	.33	1.00	.40-.30
Girls	II	Age	Exp Con	13 13	177.00 175.92	13.00 9.76	1.08	.23	.90-.80
		I.Q.	Exp Con	13 13	55.62 57.08	5.81 5.53	-1.46	.63	.60-.50
		Social Maturity	Exp Con	13 13	3.31 3.15	.98 .79	.16	.04	1.00-.90
		Emotional Stability	Exp Con	13 13	3.15 2.92	.79 .84	.23	.07	1.00-.90

As indicated in Table XLVI the matched pairs were equated on all the variables considered.

The results of the subsequent equation of these groups on the proportion of pupils who come from foreign language speaking homes are as follows:

Group	Percents of Homes with Foreign Language
Exp Ed I Boys	33
Con Ed I Boys	33
Exp Ed I Girls	35
Con Ed I Girls	35
Exp Ed II Boys	39
Con Ed II Boys	39
Exp Ed II Girls	62
Con Ed II Girls	62

The groups of matched pairs of control and experimental pupils were perfectly equated on the proportion of foreign language speaking homes.

Table XLVII presents the results of the analysis of covariance of the Advanced Core Series scores, Part I.

TABLE XLVII

Results of the Analysis of Covariance of the New York City Core Achievement Test, Advanced Series Part I of Matched Pairs of Experimental and Control Pupils

Group	Sex	Ed Level	N	Initial		Final		F
				M	σ	M	σ	
Exp	M	I	36	33.11	3.51	35.58	5.42	5.95*
Con	M	I	36	35.08	3.92	37.97	3.60	
Exp	F	I	23	30.65	5.44	32.82	5.23	4.62*
Con	F	I	23	32.30	3.80	35.74	3.70	
Exp	M	II	18	26.44	5.65	29.89	6.41	– (n.s.)
Con	M	II	18	32.00	4.95	33.67	7.35	
Exp	F	II	13	25.54	6.14	26.46	4.23	13.47**
Con	F	II	13	24.92	4.41	29.62	4.09	

*Significant at the 5% level of confidence or less
**Significant at the 1% level of confidence or less

As indicated in Table XLVII both the Ed I and Ed II control girls gained significantly more than the experimental girls on Part I of the Advanced Core Achievement Test. The Ed I control boys showed a significant gain over their experimental counterparts. No differences were found between the experimental and control Ed II boys.

The results of the analysis of covariance of the Advanced Core Series, Part II are presented in Table XLVIII.

TABLE XLVIII

Results of the Analysis of Covariance of the Core Achievement Test Advanced Series, Part II of Matched Experimental and Control Pupils

Group	Sex	Ed Level	N	Initial		Final		F
				M	σ	M	σ	
Exp	M	I	36	39.61	5.93	43.36	6.89	– (n.s.)
Con	M	I	36	43.36	6.14	45.22	8.34	
Exp	F	I	23	39.34	6.21	41.43	9.55	– (n.s.)
Con	F	I	23	42.21	5.32	44.74	5.60	
Exp	M	II	18	31.72	7.82	36.06	9.46	2.99 (n.s.)
Con	M	II	18	37.00	9.27	36.78	8.41	
Exp	F	II	13	32.54	6.53	36.77	5.63	– (n.s.)
Con	F	II	13	35.38	4.65	38.69	5.86	

As indicated in Table XLVIII none of the observed differences between experimental and control pupils on the Advanced Core Series, Part II differed significantly.

Teachers' Ratings of Pupil Growth in Personal-Social Adjustment and Motor Coordination

Pupil growth in the areas of emotional stability, social maturity and motor coordination was assessed through initial and final teacher ratings. Chapter V presents a description of the rating scales used for the areas of emotional stability, social maturity, and motor coordination.

Another analysis in the motor coordination area will be presented in a subsequent section of this chapter. The latter analysis utilized objective data obtained on two study-developed tests of motor coordination.

In order to obtain a measure of pupil growth from the beginning to the end of the school year, each teacher was asked to rate her pupils in October 1958 and again in June 1959 in each of the three areas.

Experimental and control pupils were paired on the variables of sex, age, intelligence quotient, and educability level. Equation data for these pupils are presented in Table XLIX for both sexes of each educability level.

TABLE XLIX

Means, Standard Deviations, and Significance of the Differences in Means of Chronological Age and Intelligence Quotient for Matched Pairs of Experimental and Control Pupils on Teacher-Rated Growth in Emotional Stability, Social Maturity, and Motor Coordination

Sex	Ed Level	N	Variable	Group	M	σ	Mean Diff. Exp - Con	t	P
Boys	I	158	Age	Exp Con	151.75 151.91	24.99 24.00	-.16	.06	1.00-.90
			I.Q.	Exp Con	69.27 69.20	4.79 4.91	.07	.13	.90-.80
Girls	I		Age	Exp Con	155.48 155.34	21.95 21.89	.14	.05	1.00-.90
			I.Q.	Exp Con	67.63 67.77	5.05 5.29	-.14	.22	.90-.80
Boys	II		Age	Exp Con	149.59 149.63	25.38 24.97	-.04	.12	1.00-.90
			I.Q.	Exp Con	62.36 62.43	7.52 7.16	-.07	.69	.50-.40
Girls	II		Age	Exp Con	152.13 152.26	26.38 25.23	-.13	.03	1.00-.90
			I.Q.	Exp Con	58.71 58.90	5.93 6.06	-.19	.17	.90-.80

According to the data in Table XLIX, experimental and control pupils were adequately matched for sex, age, and intelligence for purposes of this study.

Pupil growth, as measured by the difference between initial and final mean scores, was analyzed by utilizing the Wilcoxon Signed-Rank Test. A summary of this analysis which compared the growth of experimental and control groups in the three areas is presented in Table L.

TABLE L

The Significance of the Differences Between Matched Pairs of Experimental and Control Pupils' Growth in Emotional Stability, Social Maturity, and Motor Coordination

Group	N (Pairs)	z	P	In favor of
		Emotional Stability		
Ed I Boys	158	4.81	.01**	Con
Ed I Girls	131	.63	.53	
Ed II Boys	106	.84	.40	
Ed II Girls	69	.22	.83	
		Social Maturity		
Ed I Boys	158	.61	.54	
Ed I Girls	131	1.04	.30	
Ed II Boys	106	.04	.97	
Ed II Girls	69	2.05	.04*	Con
		Motor Coordination		
Ed I Boys	158	.22	.83	
Ed I Girls	131	2.31	.02*	Exp
Ed II Boys	106	1.90	.06	
Ed II Girls	69	1.18	.24	

* Significant at the 5% level of confidence or less
**Significant at the 1% level of confidence or less

Table L indicates that the control Ed I boys exhibited statistically significant greater growth in emotional stability than did their experimental counterparts. In regard to social maturity, there was a significant difference in favor of the control Ed II girls. The growth of experimental Ed II girls in motor coordination was significantly better than that of control Ed II girls. Differences in pupil growth of other groups of experimental and control pupils within the three areas were not great enough to achieve statistical significance.

School Adjustment and the Pupil Behavior Checklist

In order to assess and compare growth in school adjustment of experimental and control pupils, the Pupil Behavior Checklist was given in October, 1958 and again in June, 1959. A copy of the Pupil Behavior Checklist is in Appendix F. In using the checklist the teacher checked for each child in her class, the presence or absence of behavioral characteristics reflecting school conduct and adjustment.

Participating pupils were matched individually on the variables of sex, educability level, chronological age, social maturity and emotional stability. The equation data are presented in Table LI.

TABLE LI

Means, Standard Deviations, and Significance of the Differences Between the Means of Matching Variables of Four Sub-Groups for the Analysis of Growth on the Pupil Behavior Checklist for the Indicated Number of Experimental and Control Pairs

Sex	Ed Level	Variable	Group	N	M	σ	Mean Diff. Exp - Con	t	P
Boys	I	Age	Exp	113	152.92	24.09	.26	.05	1.00-.90
			Con	113	152.66	24.16			
		I.Q.	Exp	113	69.35	4.52	.35	.61	.60-.50
			Con	113	69.00	4.14			
		Social Maturity	Exp	113	3.19	.88	-.11	.92	.40-.30
			Con	113	3.30	1.00			
		Emotional Stability	Exp	113	3.27	.94	.18	1.39	.20-.10
			Con	113	3.09	.96			
Girls	I	Age	Exp	130	152.27	20.54	.14	.05	1.00-.90
			Con	130	152.13	23.10			
		I.Q.	Exp	130	66.85	5.42	.24	.36	.80-.70
			Con	130	66.61	5.36			
		Social Maturity	Exp	130	3.34	.93	-.19	1.59	.20-.10
			Con	130	3.53	1.02			
		Emotional Stability	Exp	130	3.32	1.00	-.10	.80	.50-.40
			Con	130	3.42	1.14			

TABLE LI (continued)

Sex	Ed Level	Variable	Group	N	M	σ	Mean Diff. Exp - Con	t	P
Boys	II	Age	Exp	81	148.75	24.18	.02	.01	1,00-.90
			Con	81	148.73	24.03			
		I.Q.	Exp	81	61.62	7.12	-.12	.11	1.00-.90
			Con	81	61.74	6.93			
		Social Maturity	Exp	81	2.51	.86	.23	1.58	.20-.10
			Con	81	2.28	.92			
		Emotional Stability	Exp	81	2.58	.91	.21	1.43	.20-.10
			Con	81	2.37	.94			
Girls	II	Age	Exp	62	146.08	29.74	.19	.05	1.00-.90
			Con	62	145.89	24.69			
		I.Q.	Exp	62	60.56	6.10	-.46	.41	.70-.60
			Con	62	61.02	6.28			
		Social Maturity	Exp	62	2.50	1.13	-.35	1.71	.10-.05
			Con	62	2.85	1.14			
		Emotional Stability	Exp	62	2.44	1.06	-.32	1.68	.10-.05
			Con	62	2.76	1.18			

According to Table LI there are no statistically significant differences between matched experimental and control pupils on the four matching variables. Groups were equated also on the proportion of children from homes in which a foreign language is spoken as evidenced by the following:

Group	Percents of Homes with Foreign Language
Exp Ed I Boys	27
Con Ed I Boys	27
Exp Ed I Girls	37
Con Ed I Girls	38
Exp Ed II Boys	32
Con Ed II Boys	32
Exp Ed II Girls	34
Con Ed II Girls	35

Statistical analysis of the data for the groups compared revealed that none of the percent differences was statistically significant with respect to the proportions of children from homes where a foreign language is spoken. The results of the application of the analysis of covariance on initial and final scores of the Pupil Behavior Checklist are presented in Table LII.

TABLE LII

Results of the Analysis of Covariance of the Pupil Behavior Checklist Scores Between Matched Pairs of Experimental and Control Pupils

Group	Sex	Ed Level	N	Initial M	Initial σ	Final M	Final σ	F
Exp	M	I	113	14.51	4.82	13.71	4.93	2.98
Con	M	I	113	15.24	4.42	14.98	4.74	(n.s.)
Exp	F	I	130	15.26	4.33	15.36	4.40	–
Con	F	I	130	15.92	3.87	15.73	4.13	(n.s.)
Exp	M	II	81	12.54	4.88	12.90	4.90	2.97
Con	M	II	81	11.43	4.58	10.90	4.92	(n.s.)
Exp	F	II	62	12.03	5.58	12.45	5.43	–
Con	F	II	62	12.37	4.94	11.97	5.49	(n.s.)

According to Table LII there are no statistically significant differences between experimental and control groups in school adjustment as rated by the teachers. However, a consistent pattern reflecting experimental gain and control loss from initial to final mean scores may be found in the comparisons of Ed I girls, Ed II boys, and Ed II girls. Both experimental and control Ed I boys showed a decrease from initial to final mean scores.

PUPIL INTERVIEWS

In June 1959, the Study psychologists completed interviewing pupils in a sample of 15 reorganized and 15 non-reorganized classes. The major purpose of these interviews was to obtain data from a source other than the teacher for the comparison of the two plans on pupil growth during the 1958-1959 school year. Growth was determined in the seven areas listed below:

1. Knowledge of Basic Personal Data
2. Leisure Time Activities and Interests
3. Motor Coordination
4. Spontaneity and Proficiency of Oral Communication
5. Attitudes Towards School, Teacher and Classmates
6. Vocational Goals
7. Peer Acceptance

Four techniques were developed by the Study for use in observing and testing the pupils. These were the Pupil Interview Form, the Peer Acceptance Scale, the Paper Pattern Cutting Test, and the Manual Dexterity Form Board Test.

The Pupil Interview Form

The Pupil Interview Form was developed to standardize the interview situation and insure uniformity of items and procedures. The establishment of good rapport with the pupil was basic to the success of this technique. As an aid in obtaining sincere responses especially to those questions assessing attitudes towards school and peers, each pupil was assured, both at the beginning of the interview and when necessary during the course of the session, that his answers were strictly confidential and would not be divulged to his teacher or classmates.

The interview form consisted of four sections. The first section assessed the pupil's knowledge of basic personal data. For example, the pupil was asked his name, address, birthdate and the date at the time of the interview. Each correct answer received one point. The maximum possible score was seven.

Part II of the form contained nine questions concerning the pupil's leisure time activities and interests. Seven of these questions were of the "yes - no" type, such as: "Do you belong to a club?", "Do you have a part-time or after school job?", and "Do you make or fix things?" Each "yes" answer received one point, yielding a maximum possible score of seven. Two free-response questions were included to allow the pupil latitude to mention any other type of hobby or activity in which he engaged. The free-responses were tallied and analyzed separately.

The pupil's vocational aspirations were assessed in Part III. Three questions were included in this section. First, the pupil was asked what he would like to be when he grew up. If a concrete vocational choice was stated, he was then asked what preparation was necessary to obtain this position and what were the duties of the job. The pupil's knowledge of the duties and preparation necessary for his vocational choice was evaluated and rated as good or poor. The job choice was placed in one of 12 categories ranging from 1-professional, 2-proprietary, 3-clerical, through 12-undecided. These categories were solely for descriptive purposes; they were based on the classification used by the United States Census Bureau and were not ranked according to occupational level.

Part IV was composed of questions designed to assess the pupil's attitude towards school. In answer to three "yes - no" questions the pupil stated whether or not he liked his school, his teacher and his class.

During the interview the psychologist analyzed the pupil's speech pattern, noting especially his ability to express ideas and convey information clearly and concisely. Using a five point scale ranging from very good to very poor, the interviewer rated the overall pupil's proficiency in oral communication covering the following four areas: comprehension of questions, spontaneity of response, clarity of response, and relevance of response.

The Peer Acceptance Scale

The Peer Acceptance Scale, a type of sociometric technique, was used to measure the social relationships existing among the pupils in the classroom. The pupils were asked orally whether or not they liked their peers. To increase the validity of the results an attempt was made to present this task to the pupil in terms clear to him. Therefore, the directions were structured and presented in the order given below. Each child was asked:

a. to name each child that he liked best in the class (those named were assigned a rating of 1);

b. to name all the other children that he liked in the class (these received a rating of 2);

c. to name each child that he disliked most in the class (these were rated as 6);

d. to name all the other children that he did not like in the class (these were rated as 5).

If there were any pupils who were not spontaneously mentioned by the child, their names were then mentioned by the interviewer and the child was asked whether he liked that pupil. Such pupils were rated 3 - not spontaneously mentioned, but liked. If the pupils were disliked they were rated 4 - not spontaneously mentioned, but disliked.

was asked to rate a pupil who had just recently been enrolled in the class. The responses in the latter grouping were omitted from the final tally. A class acceptance score was obtained by averaging the ratings given each pupil by the class.

The Manual Dexterity Form Board Test

The Form Board Test was individually administered. This test involved the placing of one inch diameter discs in 36 one and one-eighth inch holes on a board 12 inches by 12 inches. The pupil was required to perform six separate tasks testing eye-hand coordination in the use of the right and left hands separately, alternately and simultaneously.[1] Up to three attempts were allowed for each task in the case of pupils who did not understand the directions. The score for each successful performance was the number of seconds required to complete the task. Inspection of the scores for each task revealed that time for completion ranged in most cases, from 20 to 100 seconds. A ceiling of 120 seconds was assigned both to those pupils who failed to complete each task and to the limited number of physically disabled children who could achieve success only with a much greater time allowance. A total eye-hand coordination score was obtained by averaging the time scores achieved on each of the six tasks.

The Paper Pattern Cutting Test

The Pattern Cutting Test is a group administered test of eye-hand coordination. The pupils were required to cut with a scissor along an irregular pattern of increasing difficulty.[2] A scoring system was devised that took account of both time and quality of performance.[3] Cutting quality was divided into five broad areas ranging from Quality A - smooth cutting, almost perfect performance to Quality E - gross cut-offs and irregular cuts. The time scale extended from 30 to 250 seconds. A maximum of 250 was assigned to all pupils who exceeded this limit. A very small number of severely handicapped pupils required more than 250 seconds to complete the task.

In scoring each pupil's performance the quality of the cut-out was first determined, then the time of performance was located on the proper quality scale and the corresponding score assigned. At the upper and lower limits of each quality scale there was some overlapping so that, for example, a fast performance of B quality could obtain a better score than a much lower performance of A quality.

Scheduling of Interviews

In order to measure growth, two interviews were scheduled, seven months apart, during the 1958-1959 school year. The first session was scheduled for October through November 1958 and the second for May through the first week in June 1959. For several reasons a seven month interval was the maximum time that could be obtained between the two interview periods. First, the selection of matched experimental and control classes could not be accomplished until pupil data forms containing the individual I.Q., and rating of educability of each pupil had been returned by the teachers to Study headquarters.[1] This was done in the first month of the fall term. In addition, at least one month had to be allowed after summer vacation for the pupils to become acquainted, to develop attitudes of acceptance or rejection towards their peers, and to formulate attitudes towards their teachers, their schools and their class placement. As a result, interviews and testing could not begin before October. Further curtailment of the time interval resulted from the fact that the final interview had to be completed before the second week in June so that final examinations and other essential end-of-term activities would not interfere with the interview sessions.

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[1] Directions for administration are given in Appendix C.

[2] A specimen of this test is included in Appendix D.

[3] See Appendix D.

The following procedure was used to contact the schools participating in this phase of the study. Introductory letters were mailed to the principals, Bureau CRMD supervisors, and teachers of the classes in the selected sample shortly before the interviews were to begin. The letters informed them of the purpose of the interviews and asked their cooperation in making the classes available to a Study psychologist for a two day visit in the near future. Specific arrangements were made by telephone about two days before the psychologist intended to visit the class. To insure a minimum interval of about seven months between initial and final interview sessions, the classes were scheduled in the same order at both test sessions.

Interview Procedure in the Classroom

A team of psychologists was employed to visit the selected thirty classes during the two testing periods. During the first two weeks of the interviews, orientation lectures were scheduled for the psychologists in order to secure uniformity of administration and a common frame of reference for the scoring of those tasks which required the judgment of the individual psychologist. To avoid the effect of bias on the test results, no pscyhologist visited the same class for both initial and final testing sessions. At the first interview session each pupil in the class was tested individually with the formal Interview Form, the Peer Acceptance Scale, and the Form Board Test. The duration of the interview session was approximately twenty minutes per child. The Paper Pattern Cutting Test was administered to each class as a whole when the opportunity arose.

In the May 1959 interviews, the special Interview Form, the Manual Dexterity Form Board Test, and the Paper Pattern Cutting Test were administered only to those pupils interviewed in the initial interview in October. The Peer

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1. Data from these forms for all pupils in the experiment were later transferred to Mc Bee Sorting Cards. See Appendix L for a specimen copy.

Acceptance Scale, however, was administered to all the pupils registered in the class at that time, despite the fact that they may not have been enrolled at the time of the first testing. This was necessary because the Peer Acceptance Scale is a measure of the sociometric structure of the class as a whole.

The Sample

A sample of 15 experimental and 15 control classes representing all class levels was selected for the intensive interviews. The classes were selected so as to be matched, as far as possible, on range of chronological age and of I.Q. The distributions in the three class levels for each sample are shown in Table LIII.

TABLE LIII

Distribution of the Class Levels in the Sample of Experimental and Control Classes Selected for the Pupil Interviews

Experimental Classes		Control Classes	
Level and Type	N	Level	N
Primary I	3	Young	5
Primary II	3		
Intermediate I	2	Intermediate	6
Intermediate II	3		
Junior High I	2	Older	4
Junior High II	2		
Total	15	Total	15

As illustrated in Table LIII, the representation of experimental and control classes at each of the three levels was approximately equal. The two groups were almost equivalent in average class size and range of size as shown in Table LIV.

TABLE LIV

Average Class Size and Range of Size in the Experimental and Control Classes

Group	N Classes	Average Number of Pupils per class	Range of Class Size
Experimental	15	15.9	9-22
Control	15	15.4	11-22

The numbers of pupils actually tested in October-November 1958 and retested May, 1959 are shown in Table LV along with data concerning the turnover in the samples of classes.

TABLE LV

Pupil Turnover in the Selected Classes Between Initial and Final Interviews

Group	N Classes	Initial Enrollment	Pupils in Oct. testing	Pupils in May testing	% of Turnover Oct. - May
Exp	15	238	195	142	27%
Con	15	231	220	160	27%
Total	30	469	415	302	

As shown in Table LV, experimental and control samples experienced the same rate of pupil turnover in the seven month interval between the two interview sessions.

The samples which were actually utilized, included only pupils on whom the Study had complete data. In the process of making the experimental and control samples equal to each other as well as equal to the total CRMD population in respect to proportions of boys to girls and Ed I pupils to Ed II pupils, the sample size was further reduced. The samples used in the analyses included 96 control pupils and 63 experimental pupils

Results

The results of the data obtained through the interviews and individual performance tests are presented in Table LVI. These data were analyzed by a multiple regression technique similar to Fisher's covariance technique.[1]

TABLE LVI

Comparison of 96 Control Pupils with 63 Experimental Pupils on Measures of Basic Personal Data Knowledge, Leisure Time Activities and Interests, Motor Coordination and Oral Communication

Area	Mean Diff. Obtained-Expected	SE_D	t	P
Basic Personal Data	.21	.18	1.17	.30-.20
Leisure Time Activities	-.25	.18	1.39	.20-.10
Motor Coordination				
a. Manual Dexterity	-.70	2.13	.33	.80-.70
b. Paper Pattern Cutting	.65	2.74	.24	.90-.80
Oral Communication	.12	.14	.86	.40-.30

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[1] C.C. Peters, and W.R. Van Voorhis, Statistical Procedures and Their

Table LVI indicates that the obtained means were not significantly different from the expected means, thus showing that there were no significant differences in pupil growth between experimentals and controls in the four areas.

Due to the low multiple correlation between intelligence, age, initial and final scores on attitude toward school, teacher and classes, the regression technique was not employed for this particular analysis. Instead, experimental and control groups were equated on the variables of age, intelligence and initial score on attitude toward school, teacher, and class. Final scores of experimental and control groups were then compared by means of the critical ratio test. Equation data for these groups are presented in Table LVII.

TABLE LVII

Means, Standard Deviations, and Significance of the Differences Between the Means of 63 Experimental and 96 Control Pupils on Chronological Age, Intelligence Quotient and Initial Attitude Scores

Variable	Group	M	σ	Mean Diff. Exp - Con	t	P
Age	Exp	147.71	27.41	-3.07	.74	.50-.40
	Con	150.78	22.34			
I.Q.	Exp	63.25	13.58	-2.13	1.14	.30-.20
	Con	65.38	7.23			
Initial Attitude Score	Exp	3.75	.51	-.08	1.02	.40-.30
	Con	3.83	.52			

Table LVII shows that there are no significant differences between experimental and control groups on any of the matching variables.

The results of analysis of final attitude scores are presented in Table LVIII.

Mathematical Bases. New York: McGraw-Hill Book Company, 1940. pp. 463-469.

TABLE LVIII

Means, Standard Deviations, and Significance of the Difference Between Means of 63 Experimental and 96 Control Pupils on Final Attitude Scores

Variable	Group	M	σ	Mean Diff. Exp - Con	t	P
Final Attitude Score	Exp	3.86	.45	.21	.86	.40-.30
	Con	3.65	.70			

According to Table LVIII there was no significant difference between equated experimental and control groups with regard to final scores on attitude toward school, teacher and class.

Results in the Area of Vocational Choice

Precisely the same samples of experimental and control pupils were utilized in the analysis of vocational choice as were used in previously reported comparisons on basic personal data, leisure time activities and interests, motor coordination, and oral communication. The samples of 63 experimental pupils and 96 controls contained equal proportions of boys and girls. The proportion of Ed I to Ed II pupils in each sample was two to one. It has previously been shown that the total experimental and control samples showed no statistically significant differences in chronological age or I.Q.

The percents of the 38 experimental and 58 control Ed I pupils making appropriate vocational choices were 77% and 65% respectively. This difference in favor of the experimental plan did not approach statistical significance (X^2=.71, d.f.=1, $.30<P<.50$). The corresponding percents for the experimental and control Ed II pupils were 55% and 77%. This difference in favor of the control plan in the percent of realistic vocational aspirations did not reach statistical significance (X^2=2.57, d.f.=1, $.10<P<.20$).

In comparing the experimental and control Ed I pupils on knowledge of the preparation required for entry into their chosen occupation, adequate knowledge was shown by 29% of the experimental and 33% of the control pupils. This difference in favor of the control pupils was not statistically significant (X^2=.15, d.f.=1, $.50<P<.70$). The corresponding percents for the Ed II pupils were 20% and 30%, in favor of the control. This difference was found not statistically significant (X^2=.61, d.f.=1, $.30<P<.50$).

The frequencies of experimental and control pupils whose vocational aspirations fell within the professional, highly skilled, and semi-skilled occupations are shown in Table LIX.

The occupations at the semi-skilled and unskilled levels roughly coincided with those deemed appropriate by the Study for its mentally handicapped population.

TABLE LIX

Percents of 63 Experimental and 96 Control Pupils Choosing Vocations at the Indicated Levels of Aspiration

Level of Vocational Aspiration	Ed I % Exp	Ed I % Con	Ed II % Exp	Ed II % Con
Professional and semi-professional	26.19	26.56	42.86	40.63
Proprietors, craftsmen, highly skilled workers	23.81	18.75	14.29	28.12
Semi-skilled and unskilled workers*	40.48	43.75	38.10	25.00
Don't know	9.52	10.94	4.75	6.25

* Only 4 of the total of 159 pupils in the combined sample expressed the desire to enter unskilled occupations e.g. laborer, floor girl, stock boy.

As can be determined from the data in Table LIX, fewer than 10% of the total combined samples expressed no vocational aspirations. Those who aspired to occupations at the semi-skilled or unskilled level comprised 42% of all those who expressed a desire regarding the nature of their future employment.

The several comparisons involving groups of experimental and control pupils as to the appropriatness of occupational choice and the knowledge of the requirements for entering chosen occupations showed no statistically significant differences or definite trends in favor of either of the two plans.

Results on the Peer Acceptance Scale

The results based on the data obtained from the peer acceptance scale were analyized in terms of class scores, rather than scores of individual pupils. Each class score was the mean of the ratings given each pupil by his class. Two separate comparisons with control classes were made — one for Ed I classes, and the other for Ed II classes. In each case the experimental classes were matched with control classes on mean class age, mean class I.Q., and initial mean class peer acceptance score. The experimental and control classes remained basically different with respect to the teacher's ratings of educability: the Ed I and Ed II classes met the Study's requirements for homogeneous class groupings, while the control classes met the requirements for heterogeneity.

Five of the seven experimental Ed I classes in the sample interviewed by psychologists were paired with five of the fifteen control classes. The results of the matching on mean class age, I.Q. and initial class peer acceptance score are shown in Table LX below.

TABLE LX

Means, Standard Deviations, and Significance of the Differences Between the Means of Matching Variables for Five Experimental High Educable Classes and Five Control Classes for Analysis of Class Peer Acceptance Scores*

Variable	Classes	M	σ	Mean Diff. Exp - Con	t	P
Age	5 Exp 5 Con	148.32 152.78	22.57 11.87	-4.46	.35	.80-.70
I.Q.	5 Exp 5 Con	67.08 65.50	1.87 2.70	1.58	.96	.40-.30
Initial Peer Acceptance Score	5 Exp 5 Con	2.94 2.95	.10 .10	-.01	.14	.90-.80

* The mean class registers were 15.4 and 18.2 for Ed I and control classes, respectively.

As shown in Table LX, no significant differences were found between the five experimental Ed I classes and their matched control classes on mean age, I.Q., or initial peer acceptance scores. The Ed I classes remained approximately one and one-half points higher in I.Q., however, maintaining the conformance to the general pattern of higher mean I.Q.'s for the Ed I classes in the experiment.

The results of the comparison of the experimental Ed I classes with their matched control classes are shown in Table LXI.

TABLE LXI

Results of the Comparison of Final Class Peer Acceptance Scores of Five Experimental Ed I Classes and Five Matched Control Classes

Class	M	σ	Mean Diff. Exp - Con	t	P
5 Exp 5 Con	2.64 2.58	.42 .24	.06	.64	.60-.50

No significant difference in final class peer acceptance scores was found in the comparison of the Ed I classes with the control classes. Both groups of classes showed a gain in peer acceptance scores between the October 1958 and the May, 1959 interviews.[1] The net difference between the two gains in peer acceptance was .06, in favor of the control plan. In the light of the fact that the peer acceptance scores could range from 1 to 6, the obtained difference seems negligible.

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[1] Since pupils were rated on a scale that ranged from 1 (liked) to 6 (disliked), a gain in peer acceptance score is evidenced by a lower score.

Six of the eight Ed II classes interviewed were matched on mean age, mean I.Q., and initial class peer acceptance scores with six of the fifteen control classes. The equation data are shown below in Table LXII.

TABLE LXII

Means, Standard Deviations, and Significance of the Differences Between the Means of Matching Variables for Six Experimental Low Educable Classes and Six Control Classes for Analysis of Class Peer Acceptance Scores*

Variable	Classes	M	σ	Mean Diff. Exp - Con	t	P
Age	6 Exp 6 Con	142.32 145.56	21.98 16.38	-3.24	.26	.80
I.Q.	6 Exp 6 Con	61.55 64.43	4.58 1.80	-2.88	1.32	.30-.20
Initial Peer Acceptance Score	6 Exp 6 Con	2.91 2.89	.17 .17	.02	.64	.60-.50

* The mean class registers were 14.2 and 14.8 for the Ed II and control classes, respectively.

The results of the matching of six Ed II classes with six control classes showed no statistically significant differences. The mean I.Q. of the six Ed II classes remained approximately three I.Q. points lower than that of the six control classes. As was the case in the matching of the Ed I and control classes, the direction of the difference in mean I.Q.'s conformed to the general pattern of lower and higher mean I.Q.'s of Ed II and Ed I classes, respectively.

The result of the comparison on peer acceptance of the Ed II and matched control classes is shown in Table LXIII.

TABLE LXIII

Results of the Comparison of Final Class Peer Acceptance Scores of Six Experimental Ed II Classes and Six Matched Control Classes

Class	M	σ	Mean Diff. Exp - Con	t	P
6 Exp 6 Con	2.68 2.53	.28 .40	.15	.72	.60-.50

Table LXIII indicates that a small but not statistically significant difference was found between the six Ed II classes and the six matched control classes. As was the case in the comparison of the Ed I and the matched control classes, the peer acceptance in the samples from both plans gained during the interval between the interviews.

Neither the analysis for the Ed I and control classes nor that for the Ed II and control classes indicated statistically significant differences between the two plans in class peer acceptance scores.

Employment Survey

In February 1959, the Study evaluated the success of former junior high school CRMD pupils in obtaining and holding jobs. This phase of the evaluation dealt with the comparison of the reorganized plan and the non-reorganized plan in preparing the pupils for employment.

The sample of the population to be studied was necessarily restricted to former junior high school pupils, the oldest of those in the experiment. Two criteria were established for the selection of this sample. First, the pupils must have been discharged from only those classes meeting the requirements for acceptance as homogeneous experimental classes and heterogeneous control classes between September 1957 and January 1959. The second criterion for selection required a period of about one school year as the minimum length of time a pupil must have been enrolled in an experimental or control class before leaving school to seek employment. Therefore, only those pupils who terminated their schooling after May 1, 1958 were eligible to participate in the survey.

To obtain the necessary data for comparison of pupils from the two plans, a mailed questionnaire was used. Since it was not known which of those pupils who left school after the specified time were now working, the mails offered the most expeditious way of contacting all of them. The returned questionnaires of former pupils who were now employed contained the names and addresses of employers which were necessary for the follow-up study of these workers.

Checklists were mailed to the employers of all former pupils who were working and who had adequately answered their questionnaires. The questions sent to employers were designed so as not to reveal to them the identity of these workers as mental retardates. This precaution was necessary because in many cases it has been possible for pupils, even after many years in CRMD class placement, to perform their duties in working situations as adequately as workers schooled in regular grades. Furthermore, the good standing of these workers with their employers was not threatened by this method.

It was expected at the outset that some innovation would have to be added to the questionnaire technique that would stimulate response from the former pupils. It was felt that the request for cooperation in this survey might be more effective if it came from the pupil's last teacher and reflected a personal interest in his welfare. Letters designed to appear to come expressly from these teachers were prepared to accompany the questionnaires. These letters stated that the teacher was contacting all her former pupils for the purpose of gathering information concerning their experiences in obtaining employment and any problems they may have met in their work situations. The letters further explained that this information would be of value in helping the teacher to prepare other pupils to find and hold jobs successfully.

The items included in the questionnaire sent to each pupil were designed to obtain information in a number of areas so that comparisons of the two plans could be made. These areas are:

1. Number of former pupils employed full and part time for each plan.
2. Type of employment and where it was obtained
3. Job satisfaction
4. Source of assistance received, if any, in finding employment
5. The former pupil's appraisal of the role that the school played in preparing him for employment
6. The worker's plans for future training

Letters were also prepared to accompany the checklist of work characteristics to be sent to the employer of each former pupil who completed and returned his questionnaire. These letters bore the heading of the Board of Education, Bureau of Educational Research and stated that the Bureau was evaluating the occupational training provided in an experimental educational program. It had requested the employer to aid in this evaluation by checking those characteristics which were descriptive of his employee. The items in the checklist concerned the employee's attendance, punctuality, and adequacy in the work situation. Two summary questions were included which required the employer to evaluate his employee's overall work performance and to state his impression of the efficacy of the school in preparing the employee for work.

Employment Survey Population

Out of the total participating classes at the junior high school level, 44 classes were found that met the first criterion: acceptable degree of homogeneity (experimental) or heterogeneity (control). Two staff psychologists visited these classes to obtain the names and addresses of those pupils who terminated their schooling after May 1, 1958 and to have the teachers sign the contact letters. Of the pupils leaving these classes during the specified period only 141 (7 girls and 65 boys from the experimental classes and 29 girls and 40 boys from the control classes) met the second criteria, namely, about one year as an experimental or control pupil. The other pupils who had left school either were continuing their education in high school or were institutionalized.

Questionnaires were mailed to the sample of 141 inquiring of their employment status. An introductory letter in the name of the former pupil's last teacher, asking the pupil's cooperation in completing the form, accompanied each questionnaire.[1,2] A checklist of work characteristics was sent

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1. The Study attempted to obtain information from the Department of Health, Education, and Welfare regarding the status and place of employment of those former pupils who did not respond to the questionnaire. However, it was informed that Section 1106A of the Social Security Act prohibits disclosure of such information except as the Secretary of Health, Education, and Welfare may prescribe by regulation.

2. In 1956, Bureau CRMD conducted a similar follow-up study. A mailed questionnaire was used to compare the vocational and social adjustments of

to the employer of each pupil who completed and returned this questionnaire.

Results

Response to Employee Questionnaire

Of the sample of 141 former pupils qualified to participate in the survey only 128 (66 experimental and 62 control pupils) could be contacted. The remaining 13 pupils were unable to be located because they had moved and left no forwarding address. Thirty-eight of the 128 contacted (29.7%), completed and returned their questionnaires. An analysis of the sample responding is shown in Table LXIV.

TABLE LXIV

The Number of Experimental and Control Boys and Girls Respogding to the Employment Questionnaire

	Experimental		Control	
	Contacted	Responding	Contacted	Responding
Boys	65	10	40	19
Girls	7	0	29	9
Sum	72	10	69	28

Although an approximately equal number from each group was sent questionnaires in this survey, only 14% percent of the experimental and 41% percent of the control subjects responded. The latter group returned almost three times as many questionnaires as did the former.

Pupil Respondents

Description of Respondents

There was no major difference between the average age of the experimental and control pupils cooperating with the survey. The average age of the experimental group was 17 years 5 1/2 months as of February 28, 1959, while the average age of the control group was 17 years 4 1/2 months. The control group, however, did show slightly more variation in age range and length of time out of school. The ages of the controls ranged from 16 years 0 months to 18 years 6 months. Length of time out of school varied from May 1958 to February 1959. The experimental pupils' age range was from 17 years 1 month to 17 years 9 months, while their length of time out of school varied from May 1958 to October 1958.

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junior and senior high school retardates who left school. Of 510 questionnaires sent out only 140 (27.5%) were returned. This proportion closely matches the return in the present survey.

Employment History of Respondents

The employment status of the former pupils who completed and returned the questionnaire is shown in Table LXV.

TABLE LXV

Number of Employed and Unemployed Experimental and Control Boys and Girls Returning the Questionnaire

	Employed		Unemployed	
	Experimental	Control	Experimental	Control
Boys	3	10	7	9
Girls	0	2	0	7
Sum	3	12	7	16

Any analysis of the data in Table LXV concerning a comparison of the pupils from each track would be of doubtful value in helping to decide the relative merits of the educational plans under study due to the small number of cases.[1] It is pointed out that 86% percent of the experimental pupils as compared to 59% percent of the control pupils, did not answer the questionnaire. Since nothing is known about the employment status of a large majority of one group and more than half of the other, the picture given by the available data is questionable for critical comparison. A brief description, however, of those answering the questionnaire, is given in the remainder of this section of the report.

The majority of the employed respondents stated they were working full time. Of the total working, only 4 boys, 2 experimental and 2 control, reported they were employed only part time.

All 3 of the employed experimental respondents reported that they had previously been employed for a short time (1 week to 5 months.) Four of the employed control respondents reported that they had also held previous jobs for a limited time.

Among the unemployed former pupils, the control group showed a slight tendency to have been more successful in obtaining previous employment. All 7 of the experimental responderts reported they had never been employed as compared with 10 out of 16 in the control group. Four of 16 in the control group reported they had just lost their jobs within the past 3 weeks.

There was no difference between the kinds of reasons given for terminating previous employment by both the control and experimental employed and unemployed respondents. The reasons stated were: job dissatisfaction, general work slowdown, and desire for permanent employment.

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[1] As a matter of statistical interest the proportions of employed and unemployed experimental and control pupils were compared and found to be not significantly different.

There was also little difference between the two groups in their stated desire for work. Six out of 7 of the experimental former pupils reported that they were looking for work compared to 13 out of 16 in the control group. Only 1 experimental and 2 control pupils replied they were making no attempt to find employment.

Services Reported Utilized in Seeking Employment

Both the employed and unemployed experimental respondents were very limited in the range of resources they used to seek employment. Of the three experimental respondents who were employed, two had obtained their jobs through the help of relatives. The other experimental pupil reported that he had obtained his job entirely through his own efforts.

Of the 7 unemployed experimental respondents reporting on their efforts to obtain work, 1 replied he was utilizing the help of a relative as well as his former school, another was receiving assistance from both a relative and a friend, and a third was relying upon the help of a relative alone. The remaining 4 pupils stated they were not receiving help from anyone.

The control respondents on the other hand, made wider use of the employment aids available. Of the 12 employed control former pupils, 2 had used the facilities of the New York State Employment Service in obtaining employment, 1 had obtained his position through a private employment agency, and 2 others reported that their teachers had helped them to find jobs. Of the remaining 7, 3 reported that they obtained their jobs through the help of relatives, 2 others had been helped by friends and 2 had not used any outside help.

The unemployed control respondents revealed the same wide range use of employment services. Three pupils sought the assistance of the Federal Employment and Guidance Service in their search for employment. Another pupil applied to both the Federation and a private employment agency. The use of the employment and guidance services of Bureau CHMD was reported by a fifth pupil. The New York State Employment *Service was listed as an aid by* another. One pupil, currently enrolled in a private trade school, stated she anticipated using the school's placement service upon the completion of her course of study.

Only 1 control reported that he was relying on the help of a relative to find employment. Three others stated that they were not being helped by anyone in their search for a job. The remaining 5 did not reply to the item.

Job Choices

The types of employment reported by pupils from both groups covered a wide range of jobs within the unskilled laborer classification e.g., machine shop helper, stockroom helper, truck loader, factory helper, cafeteria worker, bus boy, messenger and delivery boy as shown in Table LXVI.

All employed former pupils reported that they were satisfied with their present jobs.

The unemployed experimental and control pupils also sought jobs predominantly in the unskilled laborer classification. Listed as the types of employment they were seeking were jobs as helpers in factories and building maintenance, general laborer, delivery and hospital work.

In general, the jobs currently held or being sought were similar to the previous employment. Table LXVI gives the job choices of the respondents.

TABLE LXVI

Job Choices of Employees from Experimental and Control Classes

Job Reported	No. Employed from Experimental Group	No. Employed from Control Group
1. Helper in stationer's store		1
2. Helper in machine shop		1
3. Helper in clothes cleaning shop		1
4. Helper in stock-room		1
5. Helper in loading trucks	1	
6. General factory work		2
7. Messenger and delivery		3
8. Cafeteria worker		2
9. Butcher's helper		1
10. Bus boy	2	
Total	3	12

Employees' Evaluation of the Role the School Played in Preparing Them for Employment

Table LXVII shows the responses of the fifteen employed experimental and control pupils to Item A-6 of the questionnaire[1], "Did your school work help prepare you for this job?"

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[1] A copy of this questionnaire appears in Appendix R.

TABLE LXVII

Employees' Evaluation of the Role the School Played in Preparing Them for Employment

Response	Number Reporting	
	Exp	Con
School Helped	1	3
School Did Not Help	2	7
No Reply	0	2
Sum	3	12

Nine of the 15 former pupils replying felt that the school did not help prepare them for their particular jobs. This is to be expected since it is not one of the main objectives of the junior high schools, the highest level included in this study, to prepare pupils for specific occupations. The vocational high schools in the New York City school system do, however, provide training for a wide variety of job areas.

Employed and Unemployed Respondents' Appraisal of Their Last School Year

Table LXVIII shows the experimental and control pupils' evaluation of their last year of school. Since these pupils left school between May 1958 and January 1959, the period evaluated was from September 1957 to January 1959, bridging two school years.

TABLE LXVIII

Experimental and Control Pupils' Appraisal of Learning During Their Last School Year

Response	Number Reporting			
	Employed		Unemployed	
	Exp	Con	Exp	Con
Learned more	2	7	3	10
Learned same amount	0	0	3	2
Learned less	0	1	1	0
No reply	1	4	0	4
Total	3	12	7	16

The greater part of both the experimental and control pupils responding were positive in their attitude towards their last year in school. One possible explanation of this may be the fact that the content of the cores taught in the last years of school are related to work situations and the pupils could appreciate the practical applications of the subject matter.

Plans for Future Occupational Training

Table LXIX shows the responses of the employed and unemployed pupils to questionnaire items concerning their plans for future training.

TABLE LXIX

Employed and Unemployed Pupils' Plans for Future Vocational Training

Response	Number Reporting			
	Employed		Unemployed	
	Exp	Con	Exp	Con
Plan to get training	1	2	0	5
Do not plan to get training	1	2	3	4
Don't know	0	1	1	0
No reply	1	7	3	5
Currently in training school	0	0	0	2
Sum	3	12	7	16

One fact is evident from Table LXIX. Only about one-quarter of the total group who have returned the questionnaire have positively indicated an intention to obtain, or were currently engaged in further training.

Employer Checklist[1]

The sample for this aspect of the survey was limited by three factors. These factors were, the small number of pupils returning questionnaires, the low rate of employment and, the omission of place of employment by several former pupils. As a result, checklists could be sent to only 13 employers. Of this number, 8 completed and returned their forms.

All of the employers or immediate supervisors questioned replied that they were satified with their employees. Their response to the summary question, "Do you consider the employee a good worker and would you hire another person like him?" was especially favorable. The purpose of this question was to determine if the employer either was aware that the employee was mentally retarded or felt that the worker differed in ability or aptitude from his other employees. All of the employers responded positively to this question. Two elaborated on their response: one employer praised his employee as an "excellent worker", and the other stated that the job with his firm "required a normal person able to read and write" and felt that the subject fulfilled these requirements adequately.

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[1] A copy of this checklist appears in Appendix I.

Summary of the Employment Survey

In order to evaluate the employment success of former junior high school CRMD pupils, from experimental and control groups, a sample of 141 pupils was selected on the basis of the following two criteria. First, that the pupil was taught in acceptable homogeneous experimental classes or heterogeneous control classes between September 1957 and January 1959 and secondly, that he had terminated schooling after May 1, 1958. Of the 141 pupils who qualified on the two criteria, 128 could be located. Questionnaires assessing employment status were mailed to these former pupils. A checklist of worker characteristics was sent to the employer of each employed pupil who completed and returned the questionnaire.

Questionnaires were sent to approximately equal numbers of former experimental and control pupils. Responses were received from 10 of the experimental group and 28 pupils of the control group.

In view of the large number of former pupils in both groups (86% experimental and 59% control) who did not respond and hence, about whom the employment status was unknown, adequate comparisons of the two plans of instruction could not safely be made.

Results indicated that 3 experimental and 12 control respondents were currently employed. The difference in proportions of employed and unemployed experimental and control former pupils was statistically not significant. Among the unemployed pupils, the control group had been slightly more successful in obtaining previous employment. Little or no difference could be noted between groups in regard to either reason for termination of previous employment or desire for future employment. Both groups were limited in the range of resources used to seek employment although the control group made wider use of available employment aids. The type of employment being sought and currently held by both groups was in the unskilled laborer class. All employed respondents reported satisfaction with their jobs. Nine of the 15 employed pupils replied that school did not help prepare them for their particular job. Also, 9 of the 15 were positive in their attitude towards their last year in school. About 25% of the total group reported an intention to obtain or at present were engaged in further training.

The employer's checklist was sent to all of the 13 employers on whom names and addresses were available. Eight employers completed and returned the forms. Overall response indicated that the employers were satisfied with the performance of the employees in question.

Parent Reactions

During the 1958-1959 school year the opinions of a large sample of parents of experimental and control pupils were surveyed through the use of a mailed questionnaire. Smaller samples of parents were interviewed by psychologists and comparisons concerning the two plans were made. In both the mail survey and the interviews the same eight yes-no items were used. The questions were phrased so that a "yes" answer indicated a response favorable to the plan under which the pupil was receiving instruction. The content of the items will be discussed below under the results of the evaluation.

The Mail Questionnaire Sample

An attempt was made to deliver copies of the questionnaire to the parents of all pupils in experimental and control classes except those that were to be covered by personal interviews. The questionnaire forms were distributed by the teachers to the pupils with instructions to deliver the forms to their parents. These questionnaires were to be completed by the parents and mailed to the Study headquarter in the stamped addressed envelope provided. There were 1044 pupils in the homogeneous experimental classes, and 1141 pupils in the heterogeneous control classes. The percent returns were approximately the same, being 53.3% from the experimental plan and 55.7% from the control plan. Approximately 60% of the returned questionnaires were usable. The remaining questionnaires were not usable, because the child in question had been in his assigned school for less than six months, the teacher had not checked the sex and/or educability level of the child in question in the code box when the forms were distributed or, the questionnaires themselves were mutilated where essential information was recorded.

The numbers of returned mail questionnaires usable for analysis were 374 from parents with children in control classes, and 335 from parents with children in experimental classes.[1] These constituted 32.8% and 32.1% respectively of the total samples. The numbers of parents of Ed I pupils in the usable control and experimental samples were 244 and 245, respectively. The corresponding numbers for Ed II pupils were 130 and 90. It is important to note that, for this analysis, the Ed I and Ed II classifications of the experimental pupils refer to the teachers' ratings of the individual pupils and not to the classes from which these pupils came.

The percents of usable questionnaires among the young, intermediate and older levels of the control plan were 32.6%, 23.0%, and 44.4%, respectively. For the experimental plan the percents were 37.9%, 30.4%, and 31.6% for the primary, intermediate, and junior high levels.

The Kolmogorov-Smirnov Test was employed to determine the significance of the differences between the experimental and control distributions of responses on the Parent Questionnaire. Table LXX presents the results of these analyses.

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[1] The numbers of usable questionnaires where one or more items were omitted were 16 from the control plan and 15 from the experimental plan.

TABLE LXX

Results of the Kolmogorov-Smirnov Test Comparing Total Score Distributions Based on Mail Questionnaire Responses from Parents of Experimental and Control Pupils

Parents of	Exp N	Con N	Largest Cumulative % Diff.	P
Ed I Boys	114	113	5.12	.20-.10
Ed I Girls	101	131	5.08	.20
Total Ed I	245	244	4.33	.20
Ed II Boys	57	70	19.90	.20-.10
Ed II Girls	33	60	10.91	.20
Total	90	130	15.26	.20-.10

None of the previous analyses of parent opinion through a comparison of total scores showed statistically significant differences between the two plans. The analysis was continued to include an examination of the responses to each item in the questionnaire.

A survey of the levels of confidence shown in the probability (P) column of the above table reveals that none of the difference between any two control and experimental groups was statistically significant. The direction of all the differences, however, was in favor of the control groups, that is, the parents of control pupils received higher positive scores.

None of the previous analyses of parent opinion through a comparison of total scores showed statistically significant differences between the two plans. The analysis was continued to include an examination of the responses to each item in the questionnaire. For this analysis the relatively small number of "don't know's" were excluded.

The results of the item analysis are presented in Table LXXI. None of the percent differences between control and experimental groups was statistically significant on any of the eight items.

The order of the items indicates the rank of the percent of respondents answering favorably toward the plan in question. The rank orders were the same within each plan. For the items, "Has the class taught him to obey health and safety rules?", and "Does your child like school?" the "Yes" percents of parents of both the control and experimental pupils at all levels ranged from 94.30 to 96.86. The lowest "Yes" responses ranged from 75.00 to 79.62 and were given to the item, "Has the class taught him to help with work around the house?"

In general, the great majority of the parents revealed a favorable attitude toward the schools in both plans.

TABLE LXII

Item Analysis of the Parent Mail Questionnaire

Item	Rank Order	Ed I % Yes Con	 % Yes Exp	 z	 P	Ed II % Yes Con	 % Yes Exp	 z	 P
Has the class taught him to obey health and safety rules?.	1	94.30 N=228	94.94 N=237	0.48	.64	96.86 N=158	95.56 N= 90	.01	.99
Does your child like school?	2	94.30 N=228	91.53 N=236	0.83	.41	95.60 N=159	92.31 N= 91	1.58	.12
Has the class helped him to get along better with other children?.	3	91.70 N=229	88.84 N=233	1.11	.27	91.77 N=157	90.80 N= 87	0.27	.79
Has the class helped him to write better?.	4	88.65 N=229	87.23 N=235	0.32	.75	86.71 N=158	87.78 N= 90	0.23	.82
Has the class he is in helped your child to read better?.	5	86.15 N=231	85.47 N=234	0.31	.76	83.02 N=158	81.82 N= 88	1.09	.28
Has the class helped him to improve in arithmetic?.	6	86.03 N=229	83.76 N=234	1.56	.12	82.80 N=159	77.01 N= 85	1.11	.27
Has the class improved his ability to travel?.	7	84.07 N=232	82.33 N=236	0.58	.56	82.28 N=157	76.14 N= 85	0.88	.38
Has the class taught him to help with work around the house?.	8	75.00 N=228	79.24 N=236	1.03	.30	79.62 N=157	75.29 N= 88	0.20	.84

Parent Interviews by Psychologists

Six control and six experimental classes were selected for more intensive study of parent opinion through the use of parent interviews. The classes represented each class level in each plan. The same eight questions used in the mail questionnaire were asked of the parents by Study psychologists.

There was a total of 97 pupils in the six control classes. This total included 48 pupils rated by teachers as high educables, and 49 rated as low educables. A total of 36 control parents (37%) appeared for interviews at the schools of their children; 25 of these were parents of Ed I children, and 11 were parents of Ed II children.

Only 4 of the 6 experimental classes, 2 Ed I and 2 Ed II classes, were found to be usable for the analyses. One initially homogeneous Ed I class was subsequently found to be heterogeneous; and one Ed II class was found to contain 13 of 16 children from homes where Spanish was spoken by the parents in the home. On dropping the latter atypical class from the analysis, the percents of pupils in the classes from homes where a language other than English was spoken were approximately 15% in each plan. The registers of the usable experimental classes consisted of 35 Ed I pupils and 26 Ed II pupils. The total of 24 experimental respondents from the four classes were parents of 11 Ed I children and 13 Ed II children.

Since there were only two Ed I classes and two Ed II classes from the reorganized plan, each of the three levels (primary, intermediate, and junior high) could not be represented in each plan. The primary level was absent among the Ed I classes, and the intermediate level was absent from the Ed II classes.

The Results of the Parent Interviews

The mean total score on the questionnaire for each class is shown in Table LXXII.

TABLE LXXII

Mean Scores on the Parent Interview Schedule for the Indicated Numbers of Respondents from Six Control and Four Experimental Classes

Class Level	No. of Respondents	Ed Level of Children	Mean
		Control Classes	
Primary	3	3 Ed I 0 Ed II	5.67
Primary	2	0 Ed I 2 Ed II	3.50
Intermediate	2	2 Ed I 0 Ed II	7.50
Intermediate	10	5 Ed I 5 Ed II	6.20
Older	4	1 Ed I 3 Ed II	8.00
Older	15	14 Ed I 1 Ed II	8.00
		Experimental Classes	
		Ed I Classes	
Intermediate	6	4 Ed I 2 Ed II	6.83
Junior High	5	5 Ed I 0 Ed II	7.20
		Ed II Classes	
Primary	3	0 Ed I 3 Ed II	3.33
Intermediate	10	10 Ed I 0 Ed II	6.30

An inspection of the means in Table LXXII indicates that four of the ten means were over 7 (with 8.00 being the highest possible mean). The two lowest means were 3.33 and 3.50. This information together with related data from the mail questionnaire seemed to indicate that the underlying distribution of class means would be highly skewed. A nonparametric test, the Wilcoxon T test,[1] was therefore employed to test the differences between the control and Ed I classes. No significant differences were found. Thus, on the basis of the interview findings alone, there is no reason to believe that there are important differences in the opinions of parents of children in control and Ed I classes. Since no important differences between low and high educable pupils within the control plan appeared, it would seem reasonable to accept the results as an indication of no important differences between the two plans with respect to these groups.

The mean parent opinion scores of the Ed II classes were also compared with the means for the control classes. The mean rank of the control means differed by 2 from the mean rank of the means of the Ed II classes. This difference in mean ranks was not statistically significant.

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[1] Tate and Clelland, op. cit., p. 89.

Summary of Parent Reactions

No statistically significant differences between the two plans were found through the analysis of the parents' reactions on either the mail questionnaire or the personal interviews.

The mail questionnaire involved a total raw sample of 2185 parents. The percent returns, counting the questionnaires which could not be used for various reasons, was approximately 53% from each plan. The usable questionnaires of parents whose children had been in their current schools at least 6 months were 374 from parents of children in control classes, and 335 from parents of children in experimental classes.

Separate mail questionnaire analyses were performed for high educable boys, high educable girls, low educable boys, and low educable girls. In each case the direction of the difference favored the control plan. No difference, however, was statistically significant. No significant differences appeared as a result of the parent interview analyses. The parents of children in six experimental and six control classes not given the mail questionnaire were chosen for interviews by Study psychologists. For several reasons, data from only 4 of the 6 experimental classes were usable. The same questions used in the mail questionnaire were asked of the parents during the interviews. Of the 97 parents of children in control classes only 36 appeared for interviews at the schools. Of the 61 parents of children in the four experimental classes only 24 appeared for interviews.

Analysis of the reactions of the parents on the interview schedule for this limited sample revealed no statistically significant differences between the two plans.

The Teacher Questionnaire on Reorganized and Non-Reorganized CRMD Plans

All of the formal items appearing in the 1957-1958 Teacher Questionnaire were repeated at the close of the 1958-1959 year. These items covered teacher opinion of the relative effectiveness of the two plans of instruction for the education of mentally handicapped pupils, as well as related areas such as parent opinion and teacher morale. Reorganized teachers who had taught under both plans were asked to compare their experience under the reorganization with their experience under the old plan.

For the second year of the experiment, Part II of the Teacher Questionnaire, which originally called for brief written statements concerning the advantages of the two plans, was changed to a checklist. This checklist was composed mainly on the basis of the items that were most frequently mentioned in response to the open-end questions of the previous form. In addition, several items concerning the curriculum for CRMD pupils were also included.

The Sample of Teachers

All of the 88 teachers of homogeneous reorganized classes in the Study's sample were sent copies of the Teacher Questionnaire for completion. Seventy-seven of these teachers (88%) returned their questionnaires. Of the 54 Ed I teachers in the sample, 48 (89%) returned questionnaires. In the sample of 34 Ed II teachers, 25 (74%) returned questionnaires.

Teachers were excluded from the respondent sample who had less than one year of experience under the control plan, or less than one year, six months of experience under the experimental plan; or, who did not state their experience on the questionnaire form. This limited the teacher sample to 45. The numbers of Ed I and Ed II teacher respondents with usable questionnaires were 31 and 14, respectively.

The Analysis of Part I

The Overall Summary Questions

At the close of the second year of the experiment, a majority of the Study's total sample of Ed I and Ed II teachers with sufficient experience favored the reorganized plan. Eighty-one percent of the Ed I teacher respondents and all of the 14 Ed II teachers favored the new plan, in response to the major overall question: "Considering all factors, which plan do you believe can better prepare the greater majority of CRMD children to assume adult responsibilities?" Only 6% of the Ed I teacher and none of the Ed II teachers favored the non-reorganized plan.

The question was put to the teachers of Ed I classes: "Under which plan have your Ed I children made greater social and academic progress?" Of the 31 Ed I respondents, 22 favored the reorganized plan, 2 favored the non-reorganized plan, and 7 indicated no difference. On a similar question to Ed II teachers regarding Ed II pupils all of the 14 respondents favored the reorganized plan.

The remaining one of the four overall questions was: "On the whole, which plan provided you with a more satisfying teaching experience?" Only 1 of the 31 Ed I teachers answered this question in favor of the old plan, while 13 favored the new plan, and 17 indicated no difference. None of the 14 Ed II teachers favored the old plan, 9 favored the new plan, and 5 indicated no difference. Thus, only 1 of a total of 45 respondents indicated that the non-reorganized plan provided them "with a more satisfying teaching experience."

Specific Advantages of the Two Plans

The responses by both Ed I and Ed II teachers to each of the sixteen specific items in Part I (see Table LXXIII) confirmed the favorable reaction to the reorganization shown in the answers to the overall questions. The new plan was favored over the old on all of the items, with a mean of 58% of the Ed I respondents in favor of the new plan and 7% in favor of the old. The Ed II respondents favored the new and old plans by 74% and 1%, respectively.

TABLE LXXXIII

Percents of Ed I and Ed II Teachers in the Reorganized Plan Favoring Each Plan

Item	Percents Favoring Each Plan					
	Ed I Teachers (N=31)			Ed II Teachers (N=14)		
	Reorg.	Non-Reorg.	No Diff.	Reorg.	Non-Reorg.	No Diff.
1. Children learn academic skills better.	74	3	22	79	0	21
2. Children learn manual skills better.	39	10	51	43	7	50
3. Children learn core content better	71	10	19	71	7	21
4. More friendly pupil interaction appears.	61	6	32	93	0	7
5. Children learn more social amenities from each other.	48	19	32	79	0	21
6. Emotionally disturbed children get along better	45	10	45	57	0	43
7. More children display leadership qualities . . .	45	10	45	71	0	29
8. Children demonstrate better speech and oral communication (vocabulary, diction, spontaneity)	55	3	42	64	0	36
9. More effective class lessons	77	3	19	93	0	7
10. Better organized group activities, games	52	13	35	93	0	7
11. More frequent, profitable field trips.	52	6	23	36	0	64
12. More effective instruction of small groups . . .	71	6	23	100	0	0
13. More time to devote to teaching individual children.	68	3	29	100	0	0
14. Term's plan more effectively followed.	61	3	35	71	0	29
15. Daily schedule more effectively followed	68	3	29	71	0	29
16. Parents are more satisfied with childrens' progress.	42	3	55	64	0	36
Mean %	58.06	6.94	34.69	74.06	00.88	25.00

On the whole, the Ed II respondents were consistently more in favor of the new plan than were the Ed I respondents, as shown in Table LXXIII. Similar results were reported above for the overall questions including one on satisfaction in teaching. In the 1937-1938 evaluation of teacher opinion it was found that Ed II respondents were, in general, less favorably disposed than Ed I respondents toward the reorganization. It should be noted that the samples in the two years were not equivalent, as respondents from the total sample of experimental teachers contributed toward the results for the first, while only teachers from homogeneous experimental classes contributed toward the second year's results.

The Analysis of Part II

The responses of the 31 Ed I teachers and the 14 Ed II teachers to the first six questions in Part II are shown in Table LXXIV.

TABLE LXXIV

Responses of 31 Ed I and 14 Ed II Teachers from Homogeneous Experimental Classes

Question	Teachers	A	B	C	D	E	F	G
1. To what extent were pupil transportation problems a deterrent to effective education under the reorganization?	Ed I	8	13	4	2	1	3	19%
	Ed II	0	8	2	2	1	1	29%
2. To what extent did the reorganization make possible the addition of subject matter not specifically outlined in the curriculum (better enrichment of the curriculum)?	Ed I	1	6	4	9	8	3	65%
	Ed II	0	3	1	5	4	1	71%
3. To what extent was the lack of a class consisting entirely of Ed I pupils or entirely of Ed II pupils a deterrent to effective instruction under the reorganization?	Ed I	6	10	1	3	9	2	45%
	Ed II	3	4	1	3	3	0	43%
4. For Educable I teachers only: To what extent did the reorganization allow for a greater coverage of the curriculum as specificially outlined?	Ed I	0	3	4	8	10	6	77%
5. For Educable I teachers only: To what extent is the current curriculum useful in the education of Educable I pupils?	Ed I	0	0	1	8	15	7	97%
6. For Educable II teachers only: To what extent is the new tentative curriculum for Educable II pupils useful in the education of these pupils?	Ed II	1	0	1	1	7	4	86%

A - Don't Know
B - Not At All
C - Slightly
D - Moderately
E - Considerably
F - Very Greatly
G - % Moderately or More

As indicated in Table LXXIV, 19% of the Ed I teachers and 29% of the Ed II teachers considered "pupil transportation problems a deterrent to effective education under the reorganization "at least to a moderate degree."

Also shown in this table (question 2) is the fact that the reorganization allowed 65% of the Ed I teachers and 71% of the Ed II to enrich the curriculum to more than a slight degree beyond the specifically outlined curriculum.

The third question was : "To what extent was the lack of a class consisting entirely of Ed I pupils or entirely of Ed II pupils a deterrent to effective instruction under the reorganization?" Forty-five percent of the Ed I respondents and 43% of the Ed II respondents answered to the extent of "moderately" or more. Eleven of 31 Ed I teachers and 3 of 14 Ed II teachers answered "considerably" or more.

The majority of Ed I respondents (77%) also believed that the reorganization allowed, to at least a moderate degree, "for a greater coverage of the curriculum as specifically outlined (question 4)." Sixteen of the 31 Ed I respondents believed this to be true to at least a considerable extent. As the Ed II teachers had been given a new curriculum for their pupils at the beginning of the experiment this question was not applicable to them.

The reorganization introduced a new tentative curriculum for the classes of low educable pupils. The control teachers were not given this Ed II curriculum, as the Bureau for Children with Retarded Mental Development considered it impractical to have them apply two curricula simultaneously. The responses to questions 5 and 6 show that 97% of the Ed I teacher respondents and 86% of the Ed II respondents believed that their respective curricula were at least moderately useful in the education of their pupils.

The Ed II curriculum was considered "considerably" or "very greatly" useful by 11 of the 14 teachers of low educable classes.

Two additional questions concerning the curriculum were appended to Part II of the teacher questionnaire. The first asked: "What is your best estimate of the percent of school time that you spent teaching in areas and activities as outlined in the curriculum?" The median responses of Ed I and Ed II teachers to this item were approximately 80% and 70%, respectively. The second question asked: "Approximately what percent of the curriculum suited for your pupils for the current school year will you be able to cover by the end of June?" The median responses for Ed I and Ed II teachers were approximately 90% and 75%, respectively.

Summary of Results

All teachers of homogeneous experimental classes were sent questionnaires. Seventy-seven (88%) of these returned questionnaires, but the sample was further limited by requirements of teaching experience under the reorganization to 31 Ed I teachers and 14 Ed II teachers.

The proportion of teachers favoring the reorganization on the major overall question was large enough to constitute absolute majorities of all

Ed I and Ed II teachers with suitable experience in the Study's sample. The reorganization was favored by Ed I and Ed II teachers on each of the remaining overall questions and all specific items in the questionnaire.

The results regarding which plan provided a more satisfying teaching experience were in favor of the reorganized plan for both Ed I and Ed II participating teachers, although it is not possible to state that absolute majorities of all such teachers in homogeneous experimental classes favored the new plan.

The failure to achieve homogeneous class grouping was considered at least a moderate deterrent to effective instruction under the reorganization by over 40% of Ed I and Ed II teachers.

Although both the Ed I and Ed II teachers stated that they were able to cover the major portions of the required curriculum during the school year the Ed I teachers reported a greater curricular coverage.

The Supervisor Questionnaire on Reorganized and Non-Reorganized CRMD Plans

The Supervisor Questionnaire administered at the close of the 1958-1959 school year consisted of two parts. Part I, the checklist, was the same as the corresponding section administered for the previous year's evaluation, except for the addition of three items which covered areas that supervisors had mentioned previously in written statements. Twelve specific items in Part I were identical to items that were in the Teacher Questionnaire for both years of the experiment. All items in Part II of the Supervisors Questionnaire were taken from the new Part II of the Teacher Questionnaire.

The Sample

There was a total of 13 field supervisors of CRMD classes in New York City during the two years of the experiment. Of the eight field supervisors with classes in the experiment during the 1958-1959 school year, only six had reorganized classes in their districts. One of these six field supervisors had reorganized classes under his jurisdiction for only one year, while the remaining five had two years of experience with reorganized classes. All but one of the six supervisors had control as well as experimental classes in their districts. The percents of reorganized classes in each of these six supervisors districts were 100, 85, 75, 60, 50 and 15.

The Analysis of the Checklist

The checklist contains twenty-two specific and seven overall questions. A summary of the supervisors responses to the checklist appears in Table LXXV.

The Overall Questions

All six of the respondents favored the reorganized plan on the major summary question, "Considering all factors, which plan do you believe can better prepare the greater majority of CRMD children to assume adult responsibilities?"

The majority of the respondents also favored the new plan on all but one of the remaining six overall questions. These questions covered social and academic progress for high and low educable pupils, the morale of Ed I teachers, and demands upon teacher's patience, time, and ingenuity. On each of these questions not more than one supervisor favored the non-reorganized plan, while no fewer than four favored the reorganization.

The non-reorganized plan was favored on only one overall question, which was, "Consider the teachers now assigned to Ed II classes: Under which plan has their morale been higher?" Four supervisors answered that the morale of Ed II teachers had been higher under the one-track plan, one under the two-track plan, and one indicated no difference. It should be noted that a majority of the Ed II teacher respondents to the Teacher Questionnaire answered in favor of the reorganized plan during both years of the experiment to a question concerning which plan provided "a more satisfying teaching experience."

TABLE LXXV

Number of Participating Field Supervisors Favoring Reorganized and Non-Reorganized Plans for Indicated Educational Advantages

UNDER WHICH PLAN?	Reorg.	Non-Reorg.	No Diff.	Don't know
Specific Points:				
1. 'High-Educable' children learn academic skills better.	5	0	0	1
2. 'Low-Educable' children learn academic skills better	5	0	0	1
3. 'High-Educable' children learn manual skills better.	2	0	3	1
4. 'Low-Educable' children learn manual skills better	3	0	2	1
5. 'High-Educable' children learn core content better	5	0	0	1
6. 'Low-Educable' children learn core content better.	5	0	0	1
7. More friendly pupil interaction appears.	4	1	1	0
8. Children learn more social amenities from each other	2	1	2	1
9. More children display leadership qualities	0	2	3	1
10. Emotionally disturbed children get along better.	2	1	2	1
11. Children demonstrate better speech and oral communication (vocabulary, diction, spontaneity)	4	0	1	1
12. More effective class lessons	6	0	0	0
13. Better organized group activities, games	6	0	0	0
14. More frequent, profitable field trips.	3	1	2	0
15. More effective instruction of small groups	6	0	0	0
16. Term's plan more effectively followed.	3	0	3	0
17. More teacher time available for individual instruction	3	0	2	1
18. Daily schedule more effectively followed	4	0	2	0
19. Parents are more satisfied with children's progress.	3	0	2	1

TABLE LXXV (continued)

UNDER WHICH PLAN?	Reorg.	Non-Reorg.	No Diff.	Don't know
Specific Points:				
*20. More and better use of "departmentalization", or instructional groups that disregard official class lines	4	0	1	1
*21. Less concentration of pupils with emotional problems within single classes.	2	2	1	1
*22. Better vocational education.	3	0	2	1
Overall Questions:				
23. Under which plan have your Ed I children made greater social and academic progress?	5	0	0	1
24. On the whole, which plan makes greater demands on the teacher's patience and understanding?.	1	5	0	0
25. On the whole, which plan requires more of the teacher's time and ingenuity in preparing materials?.	0	6	0	0
26. In your opinion, to which plan have more of the more above, enthusiastic teachers been assigned?.	4	0	1	1
27. Consider the teachers now assigned to Ed I classes: Under which plan has their morale been higher?	4	1	1	0
28. Consider the teachers now assigned to Ed II classes: Under which plan has their morale been higher?	1	4	1	0
29. Considering all factors, which plan do you believe can better prepare the greater majority of CRMD children to assume adult responsibilities?.	6	0	0	0

*Items 20, 21, and 22 are the only items which did not appear in Part I of the Supervisor Questionnaire for the 1957-1958 analysis.

One remaining overall question concerned the teachers assigned to the two plans of instruction: "In your opinion, to which plan have more of the more able, enthusiastic teachers been assigned?" In response to this question, four supervisors checked the reorganized plan, none checked the non-reorganized plan, one checked no differences, and one did now know. The previous year's response to this same item showed the following responses: reorganized plan- 2; non-reorganized plan- 1; no difference - 1; don't know- 4.

Thus, the responses of supervisors to the overall questions were quite similar to the responses a year earlier, with the exception of the answers to one question regarding the assignment of teachers.[1] Most respondents believed that the reorganization benefited both high and low educable pupils academically and socially. According to a majority of the six respondents, the only overall disadvantage of the experimental plan was the poorer morale of teachers assigned to Ed II classes. The more specific points of advantage of the reorganized and non-reorganized plan are discussed below.

Specific Points of Advantage of the Two Plans

An examination of the 22 specific points in Table LXXV reveals that the responses to 20 of these points were in favor of the experimental as opposed to the control plan. The experimental plan was favored by at least three more supervisors than favored the one-track plan on 16 of the 22 points.

The two points for which the responses did not favor the reorganization concerned pupil leadership qualities and emotionally disturbed children. Two respondents believed that "More children display leadership qualities" under the one-track plan, while none favored the two-track plan on this item. Of the remaining respondents, three checked "no difference", while one did not know. This represents a change from the previous year when six of eight respondents favored the experimental plan, and only one favored the control plan. On the point which stated: "Less concentration of pupils with emotional problems within single classes," each plan was favored by two supervisors. The questionnaire for the 1957-1958 year did not contain this point.

On two points the reorganization was favored by only one more supervisor than favored the old plan. These included: "Children learn more social amenities from each other", and "Emotionally disturbed children get along better".

On the whole, the supervisors' responses to the specific points on the questionnaire were quite similar to those given for the previous year's evaluation.

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1. In view of this apparent discrepancy in supervisor opinion concerning teacher assignment and its bearing on the basic assumption that both plans, on the average, had teachers of equal ability, an additional investigation of this issue was undertaken. Results of this more intensive survey on teacher ability is reported immediately following the summary of the supervisor questionnaire.

4

The Results for Part II

The supervisors responded to the seven questions in Part II on a five-point scale ranging from "not at all" to "very greatly." A specific column for "don't know" was placed before the others in order to encourage its use when the information requested was not known. To minimize the possible effects of suggestion, "not at all" was placed next on the scale. The results are shown in Table LXXVI.

TABLE LXXVI

The Number of Supervisors Answering Specific Questions in Part II of the Supervisor Questionnaire

Question	A	B	C	D	E	F
1. To what extent were pupil transportation problems a deterrent to effective education under the reorganization?			1	2	3	
2. To what extent did the reorganization make possible the addition of subject matter not specifically outlined in the curriculum (better enrichment of the curriculum)?			4		2	
3. To what extent was the lack of a class consisting entirely of Ed I pupils or entirely of Ed II pupils a deterrent to effective instruction under the reorganization?	1	1	1	2		1
4. To what extent did the reorganization allow for a greater coverage of the curriculum as specifically outlined?			1	1	4	
5. To what extent is the current curriculum useful in the education of Ed I pupils?				3	2	1
6. To what extent is the new tentative curriculum for Ed II pupils useful in the education of these pupils?			2	1	3	
7. To what extent was the lack of Ed II teachers with suitable experience a problem under the reorganization?			1	1	2	2

A - Don't know
C - Slightly
E - Considerably
B - Not at all
D - Moderately
F - Very greatly

The table above shows that only one supervisor used the "don't know" column for only one question. The greatest disagreement among the remaining supervisors also took place on this same item: "To what extent was the lack of a class consisting entirely of Ed I pupils or entirely of Ed II pupils a deterrent to effective instruction under the reorganization?". Evidently three of the six supervisors believed that the reorganization was at least moderately handicapped by its failure to achieve homogeneous classes of high or low educable pupils. It has been shown that, based upon teachers' ratings of educability, approximately 50% of the entire sample of reorganized classes had more than twenty percent of apparently misplaced pupils.

Written comments regarding the lack of suitably oriented or trained Ed II teachers had been made on the first year's Supervisor Questionnaire. Point 7 in Table LXXVI indicates that four of the six respondents believed this to be a considerable problem during the second year of the experiment.

Two points, 5 and 6, concerned the usefulness of the curricula. All six respondents believed that the curriculum for Ed I pupils was at least moderately "useful in the education of these pupils", while four supervisors indicated that the curriculum for Ed II pupils was at least moderately useful. The Ed II curriculum was used only for low educable experimental classes, while the curriculum used for Ed I classes was used for the nonreorganized classes as well.

Five of the six respondents believed that, under the reorganization, pupil transportation problems were "a deterrent to effective education" to at least a moderate extent. Three of these five believed that this was true to a considerable extent.

Summary of Supervisor Opinion

The results of the Supervisor Questionnaire show no important differences from the previous year. "Considering all factors," all six respondents favored the reorganization. However, problems for the reorganization appeared in the following areas: the morale of Ed II teachers; the lack of Ed II teachers with suitable experience for these classes; the lack of homogeneity within experimental classes; and pupil transportation.

Follow-up Investigation of the Supervisors' Responses to Question 26 of the Supervisor Questionnaire

Supervisor's responses to question 26 of the supervisor's questionnaire indicated that four of the six supervisors felt that the more able, enthusiastic teachers had been assigned to the reorganized plan. In view of the critical implications of this finding, a special rating scale was devised to inquire into the validity of the supervisors responses on the factor of teaching ability.

On Part I of this scale the supervisors were requested to rate each teacher on the following items:

a. Teacher ability and skill

b. Teacher-pupil relations

c. Class management

d. Learning environment

For each item the supervisors assigned a rating of 1 (poor) to 5 (superior or outstanding). The ratings for each teacher were summed to yield a total score for Part I.

In Part II of the scale the supervisors rated the teachers on the amount of improvement evidenced since their assignment to this study on a 1 (considerably less effective) to 5 (considerably more effective) Scale. A copy of this questionnaire is included in Appendix M.

Supervisors were requested to rate the teacher whose name appeared on the top of the sheet. When the ratings were completed they were instructed to cut off the part of the sheet containing the teacher's name. This procedure preserved the anonymity of the rated teachers.

Supervisors rated only the teachers of homogeneous experimental and heterogeneous control classes who participated in the 1958-1959 analyses. Ratings were secured on every teacher involved. Ratings of 76 control, 55 Ed I and 33 Ed II teachers were obtained.

A comparative analysis of the supervisors' ratings is presented in Table LXXVII.

TABLE LXXVII

Means, Standard Deviations, and Significance of the Differences in Mean Supervisor ratings of the 76 Control and 88 Experimental Teachers on Both Parts of the Rating Scale

Teachers	N	M	σ	Mean Diff. Exp - Con	t	P
			Part I			
Ed I	55	15.53	2.98	.17	.31	.80-.70
Con	76	15.36	3.16			
Ed II	33	14.61	3.69	-.75	1.03	.40-.30
Con	76	15.36	3.16			
			Part II			
Ed I	55	3.54	.68	.04	.36	.80-.70
Con	76	3.50	.62			
Ed II	33	3.55	.84	.05	.29	.80-.70
Con	76	3.50	.62			

As indicated in Table LXXVII there were no significant differences between supervisors' mean ratings of experimental (reorganized) and control (non-reorganized) teachers.

In view of the discrepancy between these results and those yielded by question 26 of the Supervisor Questionnaire it can be inferred that question 26 was misinterpreted. Subsequent follow-up interviews with the supervisors confirmed this inference. Table LXXVII clearly indicates that the experimental plan was not favored by the assignment of superior teachers.

CHAPTER VII

THE EVALUATION OF CRITERIA

General Statement

One of the objectives of the Study was to evaluate the present criteria and to develop additional criteria for the selection of pupils for high educable and low educable classes of retardates. The concept of educability is related to long-range outcomes of the educational process. However, in the short run the problem faced by the Bureau for Children with Retarded Mental Development was to identify and state the criteria themselves, and then to utilize the judgment of their supervisors and teachers to synthesize the data on each child to arrive at a classification. The Study decided that it could contribute most toward an evaluation of the criteria for class placement by showing the relationship, in practice, between teachers' judgments of Educable I or Educable II classification and specific aspects of the teachers' judgments concerning the pupils. This would shed light on some of the factors that entered into the teachers' ratings of educability.

Since the use of the intelligence quotient is a major consideration in the classification of mental retardates, the reliability of this measure was also investigated.

The First Analysis

To obtain a reasonably large sample upon which to base an analysis of the criteria for placement, pupils from both educational plans were used. The pupils who were chosen had all the necessary measures.

In the control population assigned to the Study, it was found that the percentage of boys to girls was slightly in favor of the boys (about 52% to 48%). It was also established, as indicated elsewhere in this report, that the ratio of high educable pupils to low educable pupils was approximately 2:1; and the number of pupils below 13 years of age was approximately twice that of pupils 13 years and over.[1] The sample used in the calculation of the intercorrelations of the variables was chosen to represent these proportions as indicated in Table LXXVIII.

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1. In the city-wide CRMD population, 13 is approximately the median age of pupils (excluding high school). To utilize the maximum number of cases the ratio of pupils under 13 years to pupils over 13 years was retained as this ratio was found in the population assigned to the Study. Samples in other analyses in this report are representative of the city-wide population in terms of age and I.Q.

TABLE LXXVIII

The Numbers of High Educable and Low Educable Boys and Girls Used in the First Evaluation of the Criteria for CRMD Placement

Age Group	Boys		Girls		Sum
	Ed I	Ed II	Ed I	Ed II	
Under 13 years	72	36	64	32	204
13 years and over	35	18	33	16	102
	107	54	97	48	306 Total

The analysis involved current Binet I.Q.'s and ratings of social maturity, emotional stability, and motor coordination, on the one hand; and teachers' ratings of Ed I - Ed II classification, on the other hand.[1] I.Q.'s were considered current if they had been gathered since January 1955. The ratings, with the exception of educability, took place in October 1957. Educability was rated in April and May 1958.

The ratings of educability were correlated with the other variables and they with each other. The resultant matrix of intercorrelations appears in Table LXXIX.

TABLE LXXIX

Intercorrelations Between Selected Variables and Ratings of Educability for the First Analysis of the Criteria for Placement Based on 306 Pupils

Variables	ES	SM	MC	Educ.
Intelligence Quotient	.25	.26	.32	.41
Emotional Stability.......		.83	.34	.35
Social Maturity.......			.33	.35
Motor Coordination....				.48

With the exception of the correlation between social maturity and emotional stability (.83), all the coefficients shown in Table LXXIX range between .25 and .48. Since none of the predictor variables correlates with the criterion of educability to a degree high enough to use alone with an acceptable level of accuracy in predicting educability, it was decided to carry the analysis further into multiple correlation.

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[1] The classification of educability is broadly referred to here as Educable I or Educable II. The actual calculations were performed on a four category continuum as described in a previous chapter, pp. 39-41.

By use of the Wherry-Doolittle Method it was possible to add one variable at a time and determine how much it contributed to the raising of the multiple correlation coefficient. Results are reported in Table LXXX. When ratings of motor coordination are used in conjunction with intelligence quotients to predict educability, the coefficient is raised from .48 (motor coordination alone) to .55 — a substantial gain. By including the ratings of social maturity as a third variable the multiple coefficient is raised to .57 (actually .5696).

The fourth and last variable to be added, ratings of emotional stability, increased the coefficient only by a small degree (.003), so that the rounded coefficient is still .57. Therefore, the use of the ratings of emotional stability does not appreciably increase the precision in predicting educability when used in conjunction with the other variables.

TABLE LXXX

The Successive Multiple Correlation Coefficients Between Educability Ratings and the Predictor Variables

Variables	R	
Motor Coordination......................	.48	(.4814)
Intelligence Quotients..................	.55	(.5473)
Social Maturity.........................	.57	(.5696)
Emotional Stability.....................	.57	(.5699)

The preceding analysis of the criteria for placement involved measures of four aspects considered by the Bureau CRMD as being important in the determination of an individual's educability: physical, intellectual, social, and personal factors. The intellectual factor is the only one where the measure, I.Q., was obtained directly from the pupils themselves from an individually administered test. The other factors are ratings obtained from teachers who were familiar with the pupils. The fact that the degree of relationship between these ratings and educability is only moderate, indicated the need for a second analysis using objective measures.

The Second Analysis

At the beginning of the second year of the experiment (October 1958), the Study-developed tests were introduced for evaluative purposes. Included were a wide-range reading test, an extended-range reading readiness test, a wide-range mathematical concepts test, and a checklist of pupil behavior.

On the basis of the results of the previous analysis of the criteria for placement, the Study continued to pursue the problem of ascertaining the components of teachers' ratings of educability. The variables in the first analysis were largely subjective measures obtained through ratings: the variables of the second analysis were objective measures obtained through direct testing of the pupils, with one exception — the Pupil Behavior Checklist. This checklist of twenty items is completed by the teachers of the pupils. In using this measure, the teacher checks whether or not the pupil exhibits the behavior characteristics presented. No value judgment or interpretation of the behavior is made by the teacher as to the school adjustment of the pupil. This procedure tended to make the pupil evaluations more objective.

In addition, the second analysis departed from the pattern of the first analysis in that no measure of physical functioning was utilized. The use of objective measures was stressed for the second analysis and the only objective measures of physical functioning[1] used by the Study were not given to large numbers of pupils because of time and personnel limitations. Therefore, the second analysis employed data already in the files as well as the results of newly constructed tests administered by the teachers.

As with the first analysis a representative sample was selected holding to approximately the same proportions of boys to girls, and high educables to low educables. This sample, of course, had to include only those who took the necessary tests and about whom other critical data were known. A sample of 311 pupils was selected from both plans and were distributed by sex, educability and broad age group as shown in Table LXXXI.

TABLE LXXXI

The Numbers of High Educable and Low Educable Boys and Girls
Used in the Second Evaluation of the Criteria for CRMD Placement

Age Group	Boys		Girls		Sum
	Ed I	Ed II	Ed I	Ed II	
Under 13 years	67	39	67	26	199
13 years and over	40	21	31	20	112
	107	60	98	46	311 Total

The matrix of intercorrelations using the variables of I.Q., mental age, chronological age, objective reading and mathematical concepts test scores, behavior checklist scores, and teacher ratings of educability are given in Table LXXXII. It will be noted that reading readiness test scores are not represented in this matrix although pupils of the reading readiness level of ability were needed and were used to give the full representation of age range. For this largely younger population the results of the readiness tests were converted so that they could be used in the matrix. The test in question covered not only readiness for reading but also extended to cover the

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1. The results of the use of the Manual Dexterity Form Board and the Paper Pattern Cutting Test were presented on pp.

first grade of reading. Furthermore, since all teachers were required to administer the entire test, it was possible to re-score the booklet for only those items covering grade one reading. Adding to this new score the chance score remaining above grade one in the Wide Range Reading Achievement Test, a close approximation was obtained of the reading achievement score that would have been gained by these pupils had they taken this test. This method of score adjustment was made possible because none of the pupils who had taken the Extended Range Test of Readiness for Reading had obtained perfect or near perfect scores on the part covering the first grade of reading.

TABLE LXXXII

Intercorrelations Between Selected Variables and Ratings of Educability for the Second Analysis of the Criteria for Placement Based on 311 Cases

Variables	I.Q.	Math.	R.A.	PBC	M.A.	Educ.
Chronological Age...........	-.21	.36	.37	.07	.55	-.02
Intelligence Quotient.......		.30	.17	.21	.45	.47
Mathematical Concepts.......			.60	.21	.60	.42
Reading Achievement.........				.18	.54	.49
Pupil Behavior Checklist....					.25	.33
Mental Age..................						.30

In general, the correlations calculated between educability and the other variables in Table LXXXII are not markedly different from those obtained in the first analysis (see Table LXXIX, p. 182) where, with the exception of I.Q., more subjective measures were used.

As with the previous analysis multiple correlations were calculated. Using the Wherry-Doolittle Method the multiple correlation coefficient for the most powerful predictors, reading achievement score and I.Q. was established as being .63 (rounded). These two variables in combination produced a considerable gain over the use of either alone. With addition of the Pupil Behavior Checklist score as a third variable the coefficient is increased slightly to .65.

Mental age was found to be the fourth variable in order of power; it raised the multiple correlation to .67. Although mental age is represented in I.Q. when chronological age is considered, it was included in this analysis because it had previously been discovered, and verified again in Table LXXXII, that chronological age and educability rating were practically uncorrelated. This lack of association is understandable in view of the fact that educability as interpreted in this study is a relatively enduring and stable characteristic, and all degrees of it can be found at any age level. However, differences in mental age were found to be reflected in the ratings of educability for various ages and therefore mental age was included in the matrix.

The scores on the Wide Range Test of Mathematical Concepts as a fifth variable contributed a lesser amount than the others. The coefficient rounded to .68 with its addition.

The only variable left, chronological age, did not raise the multiple correlation coefficient when combined with the others, but rather, lowered it slightly. Nothing is gained by the use of this last variable in predicting ratings of educability. Table LXXXIII summarizes the findings just presented.

TABLE LXXXIII

The Successive Multiple Correlation Coefficients Between
Educability Ratings and the Predictor Variables

Variable	R	
Wide Range Test of Reading Achievement.............	.49	(.4927)
Intelligence Quotient.............................	.63	(.6269)
Pupil Behavior Checklist..........................	.65	(.6498)
Mental Age..	.67	(.6687)
Wide Range Test of Mathematical Concepts...........	.68	(.6762)
Chronological Age.................................	.68	(.6756)

To investigate further the components of teachers ratings of educability, the analysis was extended to the determination of the part each variable played in the prediction of this criterion.

The Relative Weights of the Predictor Variables

To determine the independent contribution of each of the variables in establishing an estimate of educability the beta weights were calculated. These beta coefficients show the relative weights each variable contributes to the criterion independently of the other factors when expressed as standard scores, that is, with all variables reduced to the same units and variability. The beta weights for the combination of variables yielding the highest multiple coefficient of correlation are presented below.

As noted in Table LXXXIII, the highest multiple correlation was obtained from the use of the following set of scores: reading achievement, I.Q., behavior checklist, mental age and mathematical concepts. The relative weights of each of these scores, when expressed as standard scores, were found to be:

Variable	Beta Weights
Reading Achievement Score	.44
Intelligence Quotient	.43
Pupil Behavior Checklist Score	.19
Mental Age	-.27
Mathematical Concepts Score	.15

In other words, reading achievement score and I.Q. contribute about the same weight in the prediction of educability ratings. The Pupil Behavior Checklist scores carry less than half the weight of either of the first two, while mathematical concepts scores contribute only approximately one-third the weight of the reading achievement scores. Mental age is weighted negatively indicating its role as a suppression variable. The function of mental age in this composite of scores is that of partialing out some of the non-valid variance from one or more of the other measures thereby increasing the predictive value of the composite of measures.

The amount of variance accounted for by this particular combination of predictor variables can be found by squaring the multiple correlation coefficient. Since the square of .6762 is equal to .4572, then about 46 percent of the variance of the criterion, educability, can be accounted for by the composite score. However, 54 percent of the variance of the criterion is unaccounted for by these variables and must be attributed to unmeasured factors.

The question of how high a multiple coefficient could possibly be obtained between these measures and the criterion cannot be answered without further research. The size of the multiple coefficient is determined in part by the reliability of the criterion measure. Since it was not possible to obtain an estimate of inter-teacher reliability of the ratings of educability during the course of this study, the proportion of variance the predictor measures and criterion could possibly have in common could not be determined. A sufficient number of pupils used in this analysis had not been taught by two or more teachers during this period so that an adequate measure of reliability between ratings could not be determined.

Cross-Validation

To test the predictive efficiency of the multiple regression equation obtained from the second evaluation of the criteria for placement, a new sample of pupils was drawn from both the experimental and control populations. As before, the various proportions of boys to girls, Ed I to Ed II, and older to younger pupils were adhered to in the selection of the cross-validation sample. These data are given in Table LXXXIV.

TABLE LXXXIV

The Numbers of High Educable and Low Educable Boys and Girls Used in the Cross-Validation of the Second Analysis of the Criteria for Class Placement

Age Group	Boys		Girls		Sum
	Ed I	Ed II	Ed I	Ed II	
Under 13 years	35	18	31	15	99
13 years and over	18	8	15	8	49
	53	26	46	23	148 Total

Using the multiple regression equation for the five predictor variables of reading achievement score, I.Q., behavior checklist score, mental age, and mathematical concepts score, criterion scores were predicted for all 148 pupils. The predicted scores were then correlated with the teacher's ratings of educability for this sample. The resultant coefficient was determined to be .58 for this group.

Even though the multiple correlation coefficient of .68 for five variables has already been corrected for chance errors through use of the Wherry shrinkage formula within the standardization group, the difference between this value and the validity coefficient of .58 is interpreted as being due to irrelevant factors between the two groups. Although the standardization and the validation groups were selected so as to be similar on a number of factors they were, nevertheless, dissimilar on others to the extent of the difference between the coefficients. Such differences, would be expected to occur if repetitions of cross validation were made involving new similar samples. The obtained validity coefficient of .58 indicates that there is a substantial correlation between this particular set of predictor variables and the criterion.

SUMMARY

Two analyses were made of the criteria for placement of pupils in either high or low educable classes. The first used subjective teacher's ratings and I.Q. to predict teacher's judgments of educability. Using a representative sample of 306 cases, multiple correlation coefficients were calculated using I.Q., and ratings of emotional stability, social maturity and motor coordination as predictor variables. It was found that the use of ratings of motor coordination, I.Q., and ratings of social maturity produced the highest multiple correlation (.57). This analysis was not cross-validated because the second analysis seemed to offer more promise.

In the second analysis the criteria for placement are evaluated in terms of objective measures on a representative sample of 311 cases. The predictor variables were Wide Range Test of Reading Achievement score, I.Q., Pupil Behavior Checklist score, mental age, Wide Range Test of Mathematical Concepts score and chronological age. The criterion was the teacher's ratings of educability. The highest multiple correlation (.68) was obtained when all the predictor variables except chronological age were utilized. The multiple equation based on these five variables was used to predict criterion scores on a new but similar sample of 148 cases. These predicted criterion scores were correlated with teachers' ratings of educability. The resultant validity coefficient was .58 thereby indicating the marked relationship between the predictor variables and the criterion.

Analysis of Intelligence Quotients

In view of the fact that I.Q. has consistently been used as a guiding factor in the determination of the educability level of mental retardates, the constancy of the I.Q.'s of these children was investigated.

At the outset of the Study it was necessary to retest a number of pupils whose intelligence quotients were more than two and one half years old. Over a six week period during May and June 1957, 1045 mentally retarded children were retested. Qualified psychologists administered Form L of the Stanford-Binet to these pupils under the supervision of two former school psychologists with over twenty years experience each in the New York City school system.

The Study investigated the relationship between I.Q. differences over three test-retest time intervals ranging from approximately three to five years. These analyses were performed on a selected sample for the following reasons:

1. In many cases the initial I.Q. was not derived from the Revised Stanford-Binet, Form L. The use of initial results from such tests as the Wechsler Intelligence Scale for Children, the Wechsler Adult Intelligence Scale, complete or partial, would introduce a variable other than time interval between tests.

2. The Study was concerned only with children whose I.Q.'s ranged from 50 to 75, thus, those whose initial scores fell outside this range were excluded.[1]

3. For the specified time intervals between testings, approximately 3, 4, or 5 years, only a certain number of cases were available.

In this analysis all available cases were used where possible and random samples of 50 were chosen where more existed. A total sample of 249 cases were used.

Table LXXXV presents the chronological age data of the selected samples at the time of initial and final tests.

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[1] Sometimes children whose I.Q.'s are not between 50-75 are recommended for placement in CRMD classes and referred to the Bureau of Child Guidance if in the estimation of teachers and principals reasons exist for psychological evaluation.

TABLE LXXXV

Mean Chronological Age in Months for All Samples at Time of Initial and Final Stanford-Binet, Form L

Group	N	Sex	Initial Test C.A.		Final Test C.A.		F-I Dif
			M	SD	M	SD	
1954	50	M	107.42	18.46	142.30	17.99	34.88
1954	39	F	107.31	19.02	141.67	19.60	34.36
1953	50	M	100.42	14.09	143.92	17.20	43.50
1953	33	F	101.06	13.18	147.64	13.26	46.58
1952	50	M	98.54	12.13	158.08	14.72	59.54
1952	27	F	96.96	13.95	156.93	12.74	59.97

In Table LXXXV pupils are divided into six groups on the basis of sex and approximate time intervals between testings in terms of months.

Test-retest Pearson coefficients of correlation were then calculated for each testing interval and for boys and girls separately. These correlations are presented in Table LXXXVI. All final tests were given in May and June 1957.

TABLE LXXXVI

Coefficients of Correlation At 3, 4, and 5 Year Test Intervals Between Initial and Final I.Q.'s - Stanford-Binet, Form L

Initial Time Tested	Time Interval	Sex	N	r
1954	3	M	50	.74
1954		F	39	.72
1953	4	M	50	.48
1953		F	33	.62
1952	5	M	50	.57
1952		F	27	.53

Reference to Table LXXXVI indicates that there is a consistent decrease in the degree of correlation as the time intervals between testings increase. The one exception to this pattern, which occurs in the 1953 male group, may be a reflection of sampling error. The fact that the retest correlations for the three year period is in the low .70's warrants cautious use of an I.Q. that is more than three years old. Considering the five year interval where the retest correlations dropped to the middle .50's, use of these I.Q.'s for individual prediction is not recommended.

In order to determine the direction and degree of significance in the changes of these I.Q.'s, statistical comparisons of the mean initial and final results were undertaken. These data are presented in Table LXXXVII.

TABLE LXXXVII

Significance of the Mean Difference Between Initial and Final Stanford-Binet I.Q.'s Form L

N	Test	Mean	SD	F-I Dif	t	P
Initial 1954 - Final 1957 Boys						
50	Initial	67.32	5.63	-3.94	3.15	<.01
	Final	63.38	9.42			
Initial 1954 - Final 1957 Girls						
39	Initial	65.97	6.80	-2.84	1.67	.10-.05
	Final	63.13	10.96			
Initial 1953 - Final 1957 Boys						
50	Initial	69.64	4.58	-2.86	2.44	.02-.01
	Final	66.78	9.42			
Initial 1953 - Final 1957 Girls						
33	Initial	65.48	6.62	-1.91	1.08	.30-.20
	Final	63.57	12.83			
Initial 1952 - Final 1957 Boys						
50	Initial	69.12	5.60	-2.54	2.08	.05-.02
	Final	66.58	10.56			
Initial 1952 - Final 1957 Girls						
27	Initial	66.56	6.58	-6.00	3.49	<.01
	Final	60.56	10.29			

Inspection of Table LXXXVII reveals that there is a consistent decrease in mean I.Q. within the boy and girl groups at each interval. In four of the six groups this decrease in means proved to be a statistically significant one. This decrease may be explained in part by the fact that the lower levels of the Stanford-Binet are characterized by more non-verbal material as compared to the test content at the higher levels.

A marked and consistent increase in variability from initial to final testing should also be noted. This finding may be explained in part by the fact that initial I.Q.'s were selected because they fell between 50 and 75 but some retest I.Q.'s fell outside this range thereby increasing the variability. It is known also that for most measures of intellectual ability there is a tendency for individual differences to increase as age increases.

Overall results indicate that since test-retest correlations within these samples decreased as time interval increased, an I.Q.'s usefulness for individual prediction may well depend on its recency. According to these results, an I.Q. which is more than three years old should be used with caution when classifying pupils for placement in high or low educable groups.

SUMMARY

In the initial phases of the Study 1045 children were retested on the Stanford-Binet, Form L, to up-date I.Q.'s for use in the experiment. Investigation of test-retest results for time intervals of 3, 4, and 5 years on a sample of 249 children indicated that the degree of correlation decreased as time interval increased. Analysis of initial and final test results also revealed that mean I.Q.'s decreased, and variability of these measures increased consistently from initial to final testing.

CHAPTER VIII

GENERAL SUMMARY, CONCLUSIONS, AND DISCUSSION

General Summary

The General Summary is a review of the purpose of the investigation, the procedures followed in pursuit of the answer to the problem and sub-problems, the treatment of the data, and results.

Purpose

The main purpose of the Study is to compare the educational outcomes of mentally retarded children enrolled in a one-track program with outcomes of mentally retarded children in a two-track program. The two-track program involves grouping high and low educable mental retardates into two separate homogeneous classes while the one-track program involves the heterogeneous grouping of high and low educable retarded children into the same class.

Specifically, homogeneously grouped and heterogeneously grouped children with retarded mental development were compared in the areas of academic achievement, motor coordination, speech, personal and social adjustment, health habits, attitudes, activities and interests, and peer acceptance.

Other objectives included: the assessing of parents', supervisors', teachers' and principals' reactions to the two programs; the comparison of pupils from both programs with regard to occupational adjustment; the evaluation of current, and development of additional pupil classification and placement criteria; and the development of tests and measures specifically constructed for mentally retarded children.

Procedure

Available tests and measures in each criterion area were reviewed, tried out, and discarded, revised or adapted depending on the possibility of appropriate application to experimental conditions and population. Where existing measures were deemed unacceptable, new ones were designed and tested by the Study during the 1957-1958 school year and incorporated into the 1958-1959 batteries. Data were collected by the administration of tests to pupils, ratings by teachers, field supervisors, and principals, mailed questionnaires to former pupils, parents, and employers, and direct interviews.

The Population

Although the Bureau CRMD assigned approximately 3600 mentally retarded educable children to the Study, about half of this number could not be used in this Study. This was due to the fact that many CRMD classes did not meet the criteria of homogeneity or heterogeneity essential to the objectives of the Study. The remaining eligible pupils comprised about 147 classes in the 1957-1958 evaluation and 165 classes in the 1958-1959 evaluation.

From the pool of classes which met the Study's criteria, samples of matched experimental and control pupils were selected as reasonable representations of the city-wide CRMD population of 11,000 children.

General characteristics of the Study's pupil population can best be described in terms of age, intelligence quotient, sex ratio and educability level. The intelligence quotient of the population ranged from 50 to 75 while the age range extended from 8.5 years to 17.0 years. The proportion of boys and girls was 52% and 48%, respectively. There were approximately twice as many high educable (Ed I) pupils as there were low educable (Ed II) pupils.

Standardized Tests and Bureau CRMD Measures Used in Evaluation

1. The Metropolitan Achievement Tests
2. The New York Reading Readiness Test
3. Teacher's Ratings of Emotional Stability
4. Teacher's Ratings of Social Maturity
5. Teacher's Ratings of Motor Coordination

Study-Developed Measures Used in Evaluation

1. The Wide Range Test of Reading Achievement
2. The Extended Range Test of Readiness for Reading
3. The Wide Range Test of Mathematical Concepts
4. The New York City Core Achievement Test Series
5. The Pupil Interview Schedule
6. The Manual Dexterity Form Board Test
7. The New York Paper Pattern Cutting Test
8. Psychologists' Ratings of Oral Communication
9. Teachers' Ratings of Growth in Intelligibility and Spontaneity of Speech
10. Teachers' Ratings of Growth in Attitude toward School and School Activities
11. Teachers' Ratings of Growth in Health Habits
12. Teachers' Nominations of Liked and Disliked Children
13. The Pupil Behavior Checklist
14. Questionnaire on Employment Status
15. Employer Checklist of Worker Characteristics
16. The Teacher Questionnaire on Reorganized and Non-Reorganized CRMD Plans
17. The Supervisor Questionnaire on Reorganized and Non-Reorganized CRMD Plans
18. The Principal Questionnaire on Reorganized and Non-Reorganized CRMD Plans
19. The Parent Questionnaire

Treatment of Data

In view of the differences in measuring instruments used, the treatment of data for the 1957-1958 evaluation and the 1958-1959 evaluation are described in separate sections.

1957-1958 Evaluation

Analysis of collected data was as follows:

1. Experimental and control pupils were matched on sex, age, intelligence quotient, emotional stability, social maturity, educability level, and test (level and form). Academic achievement of groups was compared by the analysis of covariance technique on the results of the following standardized tests:

   a. Metropolitan Achievement Test, Reading
   b. Metropolitan Achievement Test, Arithmetic
   c. New York Reading Readiness Test

2. The growth of matched pairs of pupils, as indicated by teachers' ratings, was compared by means of the sign test analysis in the following areas:

   a. Gross motor and eye-hand coordination
   b. Speech
   c. Emotional stability
   d. Social maturity
   e. Punctuality and attendance
   f. School work habits
   g. Willingness to learn
   h. Health habits
   i. Interests

3. In the area of peer acceptance, the percents of children nominated by their teacher as "liked" and "disliked" in each plan were compared by means of a chi-square analysis.

4. The analysis of the reactions of teachers, supervisors, and principals to the reorganized and non-reorganized plans are treated descriptively for the main part. Chi-square analysis and the Kolmogorov-Smirnov Two-Sample Test were employed in the analyses of some of these data.

1958-1959 Evaluation

1. In the comparisons of academic achievement, pupils were matched on the variables of sex, age, intelligence, social maturity, emotional stability, educability level and test (level and form). Groups were equated with respect to the proportion of children from homes in which a foreign language is spoken. The analysis of covariance technique was employed on the following tests of academic achievement:

   a. The Metropolitan Achievement Tests (Reading and Arithmetic)
   b. The New York Reading Readiness Test

c. The Wide Range Test of Reading Achievement
d. The Extended Range Test of Readiness for Reading
e. The Wide Range Test of Mathematical Concepts
f. The New York City Core Achievement Test, Primary and Advanced Series

2. Growth of matched pairs of control and experimental pupils in personal-social adjustment as indicated by teachers' initial and final ratings, was analyzed by the Wilcoxon Signed-Rank Test.

3. Results of the two measures of pupil growth in motor coordination, namely, teachers' ratings and individual motor coordination tests, were treated separately. Teachers' ratings of motor coordination were analyzed by the Wilcoxon Signed-Rank Test. A multiple regression technique was employed in the comparison of performance scores of experimental and control pupils.

4. Growth in school adjustment of matched pairs of control and experimental pupils was compared by means of analysis of covariance of scores achieved on the Pupil Behavior Checklist.

5. A multiple regression technique was employed in the comparison of experimental and control pupils on the following measures and ratings obtained from pupil interviews:

a. Knowledge of basic personal data
b. Leisure time activities and interests
c. Oral communication

6. In comparing experimental and control pupils on attitude toward school, teacher and class, groups were equated on age, intelligence and initial attitude scores. The difference between mean final attitude scores was analyzed by means of the t-Test.

7. In the area of vocational choice, separate chi-square analyses were performed for each sex and educability level. Equated groups were compared on both level of aspiration and knowledge of the preparation essentials to the chosen occupation.

8. For the comparisons of peer acceptance, experimental and control classes of Ed I and Ed II pupils were matched with respect to mean class age, mean class IQ, and initial mean class peer acceptance score. Final mean class peer acceptance scores were tested for significant differences by means of the t-Test.

9. Results of the employment survey were treated descriptively because the final comparison samples were too small to warrant statistical analysis. Experimental and control group data were summarized for the following areas: employment status, job satisfaction, attitude toward the school's preparation for employment, plans for further training, and employer's rating of the worker on the job.

10. The Kolmogorov-Smirnov Test was employed to determine the significance of the differences in the responses of parents of experimental and control pupils on a mailed questionnaire. The responses of parents on the Parent Interview Schedule were analyzed by the Wilcoxon T Test.

11. The responses on the Teacher Questionnaire were treated descriptively in terms of differences in percent response for Ed I and Ed II teachers separately.

12. The results on the Supervisor Questionnaire were treated descriptively in terms of differences in response frequency of the six supervisors who had experience with both reorganized and conventional plans.

13. The questionnaire responses of principals having experimental classes were compared with those having control classes by means of the Kolmogorov-Smirnov Test. This analysis covered the 1957-1958 school year.

Evaluation of Criteria

Analyses of the criteria for the placement of pupils in either high or low educable classes were conducted during both years. The first analysis was based on teacher ratings and Stanford-Binet IQs in the prediction of teacher's estimation of the educability level of pupils. In the second analysis, the criteria for pupil placement were evaluated in terms of more objective measures. Multiple correlation coefficients were calculated by the Wherry-Doolittle Method in order to determine the predictive value of the combined measures.

An investigation of IQ constancy for a sample of the pupil population was conducted. Pupils whose IQ's were either 3,4 or 5 years old were retested during May and June 1957. Test-retest reliability coefficients were computed. In addition, the significance of test-retest mean score differences were determined by means of the t-Test.

Results

In this section the results of the two-year evaluation, 1957-1959, are presented.

Academic Achievement

Analysis of results on the Metropolitan Reading Achievement Tests yielded significant differences in three out of ten comparisons over the two year period; of these significant results, one was in favor of experimental pupils on the elementary battery and two were in favor of control pupils on the primary I and II batteries. Each comparison included experimental and control groups containing both sexes and both educability levels.

On the Study-developed tests of reading readiness and reading achievement, six comparisons were made. Each comparison involved separate experimental and control groups of each sex and educability level. None of the comparisons yielded significant differences between organized and reorganized plans.

In the area of arithmetic fundamentals, no significant differences were found in eight comparisons of grade scores derived from the Metropolitan Achievement Test. The experimental and control groups compared, included both sexes and both educability levels.

Four separate comparisons were made utilizing the scores on the Wide Range Test of Mathematical Concepts. Experimental and control groups were divided into sub-groups on the basis of sex and educability level. One of the four comparisons yielded a significant difference. This difference was in favor of the control low educable boys.

Twelve comparisons were made using the results of the New York City Core Achievement Tests. Experimental and control groups of each sex and educability level were compared on the scores of the Primary Series, and the Advanced Series (Parts I and II) separately. Comparisons at the Primary and Advanced (Part II) levels yielded no significant differences. However, three of the four comparisons at the Advanced level (PartI), revealed statistically significant differences in favor of the control pupils. The control groups which revealed significant superiority over their experimental counterparts on the Advanced Series (Part I) were the high educable boys, the high educable girls, and the low educable girls.

Overall results in the area of academic achievement indicate that of forty separate comparisons, seven yielded statistically significant differences. One of these significant differences favored the experimental plan while six significant differences favored the control plan.

Motor Coordination

Teachers' ratings of pupil growth in motor coordination were compared separately for both sexes and the two educability levels of experimental and control pupils. Of these four comparisons, one yielded a significant difference. Based on these ratings, experimental high educable girls exhibited more growth in motor coordination than did their control counterparts.

Two major comparisons of experimental and control pupils' scores on the performance tests of motor coordination were drawn. Compared groups included both sexes and both educability levels. No significant differences in the motor coordination performance scores of experimental and control pupils were found.

Speech

Six comparisons of teachers' ratings of pupil growth in oral communication were made. Within the experimental and control groups each educability level was treated separately. Boys and girls were treated both as separate groups and as a combined group. Three of six comparisons resulted in significant differences in favor of the low educable experimental pupils. The three experimental Ed II groups of boys, girls, and combined boys and girls exhibited significant superiority over their control counterparts. Significant differences were not yielded by the comparisons among high educable students.

One major comparison of experimental and control pupils' growth in oral communication was drawn from psychologists' ratings in 1958-1959. This comparison revealed no significant differences between experimental and control pupil growth in this area.

Personal and Social Adjustment

Separate comparisons of teachers' ratings of emotional stability were drawn for each sex and educability level of experimental and control groups. In the 1957-1958 analysis, boys and girls were treated both separately and as a combined group. In 1958-1959 the results for boys and girls were not combined. Thus, a total of 10 comparisons were performed. Results yielded one significant difference which was in favor of the control high educable boys.

Teachers' ratings of social maturity were compared in the same manner as teachers' ratings of emotional stability. Of the ten comparisons, two significant differences were found. These differences favored the control low educable girls in 1958-1959 analysis and the experimental group of combined low educable boys and girls in the 1957-1958 analysis.

In the 1957-1958 analyis of peer acceptance scores derived from teachers' nominations, twelve separate comparisons were drawn. The peer nominations were made at the end of the school year. Three of the twelve comparisons yielded significant results as follow: superior acceptance of all pupils in Ed II classes compared with all pupils in control classes; superior acceptance of Ed II pupils in Ed II classes compared with Ed II pupils in control classes; superior acceptance of Ed II pupils in Ed II classes compared with Ed II pupils in Ed I classes. No significant differences were found in any of the comparisons involving high educable pupils.

The 1958-1959 peer acceptance measures were derived directly from pupils as reported to psychologists. The mean class peer acceptance scores for matched experimental and control classes were compared separately for each educability level. No significant differences were obtained. Differential and high pupil turnover rates from initial to final determinations may have affected the results.

Health Habits

Pupil growth in the area of health habits as assessed from 1957-1958 teachers' ratings resulted in six comparisons. Boys, girls, and combined groups of boys and girls at each educability level within experimental and control groups were treated separately. Four of the six comparisons yielded significant results in favor of the experimental plan. The four experimental groups which manifested significant superiority over their control counterparts were the high educable girls, the low educable boys, the low educable girls, and combined group of low educable boys and girls.

School Adjustment

Teachers' ratings of pupil growth obtained in 1957-1958 in the areas of school work habits, willingness to learn, punctuality and attendance were compared for each educability level. Groups of all boys, all girls and combined boys and girls were treated separately. Thus, for each area of school adjustment, six comparisons were drawn. The comparisons revealed no significant differences between experimental and control high educable pupils. Among low educable pupils, however, the following five experimental groups manifested superior growth over their control counterparts ; all girls, and combined boys and girls in the area of school work habits; all girls, and combined boys and girls in the areas of punctuality and attendance.

In 1958-1959 the analysis of scores on the Pupil Behavior Checklist and attitude towards school, teacher and class indicated that there are no significant differences between experimental and control pupils in these areas of school adjustment. These results were obtained on data gathered in 1958-1959. However, not only were there no significant differences between the two groups but also little or practically no gains were registered by both control and experimental groups between initial and final tests. Therefore, these results should be interpreted with caution,and final judgment concerning them should be suspended until more sensitive measures are developed and validated.

Leisure Time Activities and Interests

The 1957-1958 teachers' ratings of pupil growth in range and diversity of interests were compared separately for experimental and control pupils of each educability level. Groups of all boys, all girls and combined boys and girls represented each educability level. Thus, a total of six comparisons were drawn. One comparison yielded a significant difference. This result was in favor of the experimental low educable group of combined boys and girls. No significant differences were obtained in the analysis of high educable experimental and control pupil growth in this area.

In 1958-1959 psychologists' ratings of the experimental and control pupil growth in leisure time activities were compared. No significant difference was found. Insufficient data precluded adequate comparisons by educability level.

Occupational Adjustment

A comparison of the vocational choice and knowledge of the requirements for chosen occupations revealed no significant differences between experimental and control groups.

Similarly, there was no appreciable difference between former experimental and control pupils with regard to employment status or employer's satisfaction with worker's performance on the job. No conclusions could be reached in this area due to the small number of former pupils available and because pupils in both plans may not have been participants for an adequate amount of time.

Reaction of Parents, Teachers, Supervisors, and Principals Toward One and Two Track Plans

Analysis of reactions of parents derived from interviews and mail questionnaires revealed no differences between parents of experimental and control pupils. Both groups of parents exhibited a very favorable attitude toward their children's educational program.

Questionnaire responses of both teachers and supervisors participating in the two track plan over both years revealed a clear trend in favor of the reorganization plan despite the recognition of the following problem areas in reorganized classes: concentration of emotionally disturbed pupils in Ed II classes; lower morale of Ed II teachers; failure to achieve complete homogeneous grouping.

No significant differences were found in questionnaire responses between principals of schools with experimental classes and principals of schools with control classes with respect to selected administrative and supervisory responsibilities.

Evaluation of Educability Criteria

Analysis of pupil classification criteria for the first year of the evaluation indicated that the use of IQ and teachers' ratings of motor coordination and social maturity produced the highest multiple correlation (.57) for predicting the educability level of pupils.

In the second year analysis it was found that the use of the Wide Range Test of Reading Achievement score, IQ, Pupil Behavior Checklist score, mental age and the Wide Range Test of Mathematical Concepts score yielded the highest multiple correlation (.68). When the latter predictors were used to forecast teachers' assessments of educability in a cross-validation sample, the resultant validity coefficient was .58.

Investigation of IQ test-retest results on the Stanford-Binet for time intervals of 3,4, and 5 years indicated that the degree of correlation decreased as the time interval between tests increased. Analysis of test-retest results also revealed that mean IQ scores decreased and variability of these measures increased, from initial to final testing. According to these results,an IQ which is more than three years old should be used with caution when classifying pupils for placement in high or low educable groups.

Conclusions and Discussion

A survey of the various comparisons undertaken in the area of academic achievement reveals that no clear trend appeared to support either homogeneous or heterogeneous grouping.

In certain intangible areas the experimental low educable pupils tended to function better than their control counterparts. For example, in selected aspects of school adjustment and peer acceptance as observed and rated by the teachers, the low educable experimental pupils seem to have benefited more from the reorganized plan. One explanation for this finding is that the low educable pupils may have felt themselves less segregated in the homogeneous plan where more opportunities existed for increased social interaction among peers. A similar finding was reported by Johnson [1] who studied the acceptance of retarded children in normal classes, and found them to be among the least accepted in these regular classes. Further studies are needed on the effect of homogeneous grouping on social and emotional development of pupils based on more direct measures and extended observations.

In speech and health habits as observed and rated by the teachers, the experimental low educables registered significant growth over their controls. No significant differences appeared between the experimental and control pupils in growth in motor coordination.

In answer to the basic question, namely, which of the two plans is most effective in the desired outcomes, it is evident that the available evidence cannot weigh the balance wholly in favor of either homogeneous or heterogeneous grouping at the present time. Despite the fact that direct measures of pupil growth in various areas do not yield a clear trend, participating teachers and supervisors generally favor the reorganized plan.

In view of the apparent discrepancy between the results of direct pupil measures and the judgments of participating educators, it is recommended that further research be resumed at a later date in order to give the reorganized plan more time to be effectively implemented and stabilized. Better methods of pupil classification are needed. Teachers of experimental high educable classes as well as the teachers of low educable classes should have a specially designed curriculum to guide them in the differentiation of content and method according to ability level. Both groups of experimental teachers and children were still experiencing a relatively novel situation at the close of the Study in comparison to control teachers and pupils. Once reorganization has been in effect for several years and some of its inherent problems have been compensated for, it can be more adequately compared with the non-reorganized plan which has been in existence for many years. In addition, other aspects of the basic question, such as comparative per capita costs, should be included in the evaluation.

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[1] Orville G. Johnson, "A Study of the Social Position of Mentally- Handicapped Children in the Regular Grades," American Journal of Mental Deficiency, 55 (July, 1950), pp. 60-89.

In general, the findings of this Study tend to be in accord with fifteen of the 33 experimental studies of homogeneous grouping reviewed by Ekstrom.[1] The fifteen studies found no differences in achievement in homogeneous or heterogeneous groups, or where homogeneous grouping was detrimental. On the other hand, thirteen of these studies found differences favoring homogeneous grouping, and five reported results partially favorable and partially unfavorable to homogeneous grouping.

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[1] Ruth B. Ekstrom, Experimental Studies of Homogeneous Grouping: A Review of the Literature, Princeton, New Jersey, Educational Testing Service, April 1959, pp. 1-26.

Supervisors of the Bureau for Children with Retarded Mental Development Participating in the New York City Study of Mentally Handicapped Children

Madeline E. Dalton*
Freda Esh
Ethel Friar
Dolores Gillen
Irwin Goldstein
Barbara May
Willia Peace
Irene Pollard
Ines Riggio
Leo Shainman
Nell White

*Recently appointed as Assistant Director of the Bureau for Children with Retarded Mental Development.

Principals and Teachers Participating in The New York City Study of Mentally Handicapped Children

Manhattan Schools	Principals	Teachers
1	Toby M. Kurzband	Mary Ryan
3	Lincoln M. Barr	Brigida Cavicchia, Michael Mackler, Viola Russ
4	Irvin Rosenblum	John Stover
5	Edwin C. Kaufman	Hildegarde Goldman
12	Henry Seideman	Gertrude Mc Gaulley, John Neary
13	Bernard Weiss	James Garvey, John Lane, Anthony Mancuso, Josephine Ross, Luther Seabrook, Charles Santocroce
14	Agnes D. Ether	Josephine Barrett
15	Paul Bisgaier	Thelma Bullock
19	Jeanette Flicker	Margaret Coan, Nancy Girardi, Fred Johannessen
22	Joseph Schroff	David Levine, Betty Ofsevit, Sylvia Wade
24	Lewis L. Berlin	Samuel Laster
31	Hyman Terner	Max Fuchs
39	Nathan Plung	Mary Callery, Connie Taylor
43	Daniel Schreiber	Charles Conner
45	Pearl O. Shutman	Brunetta Ware, Carrie White
46	Max S. Meiselman	Juanita Drake, Daisy Jones
57	David Gluck	Virgina Clarke, Gertrude Jacobs, Helen Zaremba
60	Max Francke	Rosemarie Fay, Minnie Isenberg, Miniva Williams Carrie Killingham, Carrie Mc Coy
61	Frank S. Sacks	Muriel Hangs, Martin Shapiro
63	Philip Jaffe	Gwendolyn Banks, Alma Gray, Pauline Palmer Dorothy Sokolski
65	Jacob Kessbom	Morris Haven, Marietta Jones, Michael Payne, Domenic Pirraglia
68	Harold G. Sklar	Josephine Kelleher, Fred Noel, Grace Peterson, Rhoda Wissner
72	Marion Brick	Mortimer Cohen, Irvin Lulkin, Georgiana Mc Cabe
78	Mildred Waltzer	Perry Rothenhaus, Inge Wertheim
86	Joseph Schumacher	Louis Thaler
88	Milton Hanaver	Margaret Harrison, Walker Austin, Naomi Williams

Manhattan Schools	Principals	Teachers
90	Selig Paskin	Esther Grossmark, Alma Jeffries, Grace Stretch
98	Harry I. Rothman	Mary Hope
99	Louis Teichman	Evelyn Botens, Virginia Hamilton, La Vera Johnson, Elsie Klassen
102	Irving Weiner	Peter Massair, Dorothy Shapiro
103	Alfred Zimberg	Lamar Jones, Alma Wiles
104	Pauline D. Levy	Theresa Sabbatino
107	Veronica M. Flynn	Hyacinth Johnson
108	Jack August	Robert Daub, Sanford Slackman
109	Stella Andrews	Charles Berkowitz, Michael Schoeff
113	Fannie Livshee	Eddica Allen, Mary Burgess, Naomi Norton, Helen Storrs
115	Lorraine Addelston	Sidney Cohen, George Thomas, Ann Timoteo
116	May M. O'Hara	Florence Roche
117	Israel S. Flax	Joseph Barile, Hilda Newsome, Estelle Roach, Murray Stevens, Evelyn Strodl, Joseph Wattenberg
119	Elliott Shapiro	Katherine Francis, Edgar Parrish
120	Alex. Rosenblatt	Jack Barrack, Louis Cancro, Samuel Morse, Sara Toner, Isador Weider
121	Herman D. Satlow	William Sacher, Sayde White
125	Anne G. Ruddy	Helen Freeman
132	Rose D. Riskioff	Grace Dudley
133	Benjamin Friesner	Margaret Scott
136	Alfred Nussbaum	Sylvia Finkley, Goldie Fritz, Virginia Sims
139	Abraham Wilner	Irving Anthony, Martin Burrows, Moe Genner, Rebecca Gerson, Edward Jackson
147	Louis Stoller	Rose Becker
157	Bernard Friedman	Melissa Cooper, Claudia Ward
158	Virginia Fisher	Lillian Bernstein, Eileen Burkel, Birdie Kellum
164	Eugene Maleska	Charles Collins
167	Joseph Metz	Esther Goldberger, George Modrow
168	Katherine Sullivan	Francis Gorman, Gertrude Herman, Nina Slausen
169	Jack Frank	Amy Nelson, Margorie Smith, Mildred Stapf
172	Maurice Bleifeld	Sam Rosenkranz, Emily Ruh, James Mc Nair, Genevieve Nash

Manhattan Schools	Principals	Teachers
175	Daniel G. Krane	Jane Burrus, Olive Gaillard, Alma Jones, Beatrice Kennedy, Adele Richards
177	Arthur Gregor	Jack Alkano
184	Abraham D. Gold	Muriel Tolbert
186	Milton P. Borin	James Hess, Walter Williams
188	Hyman Finkelstein	Miriam Melmed
194	David S. Edelstein	Hudson Oliver
197	Elsie Wolk	Celeste Stone
Brooklyn Schools		
3	Harry L. Janoson	Louarthur Mac Dougall, Janie Nelson
9	Morton Weinberger	Yetta Birnbarm
11	Harry L. Lutzer	David Bareck, Bernice Thomas
20	Carl V. Warren	La Francis Hills, Angela Martin
42	Herman Lazerson	Raymond Caron, Katherine Mc Enery, Eva Russo, Vera Williams
44	David Gordon	Hyman Alpert, Pecolia Hennigan, Ethel Roudolph
45	Marcy H. Cowan	Marvin Jacobson
54	Seymour Barrett	Marvin Kelly, Herbert Rabb
63	Morris Freedenberg	Bernard Davis
64	Jacob Landers	Joseph Curro, Dorothy Draper, Elaine Wilbon
67	James J. Mc Cue	Thomas Pirello, Carmine Saginario
77	Benjamin Gise	Vivian Belk, Genevieve Bucalo, Sidney Sorkin
93	Joseph H. Graff	Dorothy Posner, Harold Ruvin
105	Madeline V. Brown	Anna Fusco, Ethel Glass, Ann Kelly, Cecilia Murphy, Doris Picard
117	Bertram E. Weiss	Margaret Morsell, Michael O'Leary
138	Joseph Satin	Margaret Blehl, Catherine Burke
140	Mary L. Mulhearn	Julia Carosella, Anthony Colletti, Louise Noble, Irene Reynolds, Beatrice Smith
157	Morris L. Simon	Marvin Barondes, Lelia Strickland
158	Emil Soskind	Minnie Kaperowsky
166	Irving Flinker	Harry Goldsmith, Rose Levine

Brooklyn Schools	Principals	Teachers
179	Louis Gartenlaub	Max Heckerling, Minnie Koningsberg
181	David Weinberger	Virginia Burr, Francis Forschmidt, Mollie Rubin
182	Israel Solemnick	Alice Morrisey
194	Morris Pincus	Lillian Kelly
202	Charles Eichel	Elaine Bernstein
207	Elizabeth Leary	Winifred Meagher
227	Joseph Lightcap	Leon Dachs, Joseph Kessler, Anthony Maniscalco, Marcella Wechsler
238	Joseph Greenberg	Olive Backus, Susan Birkenhead, Esther Rosenberg, Rose Steinberg
258	Isidor Averbach	Mildred Patterson, Carlo Safina
278	E. Stachenfeld	Sol Daniels, Gordon Fox, Herman Rothstein, Francis Sattler
287	Alfred J. Sirutis	Arnold Goldstein, Leah Schoen

Bronx Schools		
6	Blanche Lasker	Edith Helwith
32	Dennie A. Hayes	Reuben Sternin, Sally Waters
44	James A. Dooley	Mary Mc Caffrey
45	Benjamin Starr	Fanny Bodell, Allie Stevens
46	Mary A. Roden	Dora Jaeger
57	Beatrice Haskell	Eleanor Mc Cullough, Ruthe Weinman
59	Simpson Sasserath	Stanley Weiss
67	Joseph Rosen	Herbert Aronowitz
79	John J. Donohue	Tillie Lozea
85	Frank Barmack	Belle Bloom, Hilda Fuss
86	Robert Petluck	Margaret Connick
89	Gertrude Murphy	Margaret De Felice, Catherine Martin, Ida Morchera, Joseph Pinto, Sydelle Press
91	Marion Robinson	Mollie Kleiner
92	Sidney N. Levy	Maude Tierney
95	Mary B. Flynn	Dorothy Smyth
103	Bernard Berne	Madeline De Rossi, Robert Holzberg, Sarah Reese, Celia Shute, Theresa Wilson

Bronx Schools	Principals	Teachers
113	Bernard Leibson	Fred Ceglia, Blanche Pollock, Eva Silver, Sara Zucker
115	Mariam L. Lewis	Catherine Back
118	Marion Gambella	Philomena Lowinger, Alice Maram
143	Robert Robinson	Anita Trotta
Queens Schools		
14	Philip Cerchick	George Karl, Marion Parker
16	Walter Freund	Frank Caramore, Bellesanaro Carubia, Elizabeth De Domenico
19	Benjamin Ellman	Bertha Gersh, Alice Reynolds
20	Louis W. Phillips	Esther Farrell, Marie Weiss
33	Elsie Stahl	Marie Bernhard, Rose Leiterman
41	Donald Charlton	Margaret Patterson
71	Beatrice Richards	Catherine Goldner
73	Joseph Gainsburg	Daniel Tarantine
93	Joseph A. Downey	Josephine Perry, Sally Stewart
95	Murray Sussman	Dorothy Murphy
107	Bernice Shapiro	Rose Klein
117	Tamah Axel	Elizabeth Boltres
143	Max Schenkler	Beatrice Magdoff
158	Samuel Ettinger	Charlotte Eiser
163	Mary M. Leddy	Blanche Campbell
179	Evelyn Sperling	Theodora Greenberg, Helen Wisot
217	Morris Hertzig	Ben Wachs
Richmond Schools		
13	Horace Lapman	Joseph Coluontona, Anna Di Crocco, Aileen Forsyth, Rae Kahn, Dorothy Parrish, Helene Schmidt
17	Sidney Bloomgarden	Sarah Rausen, Salvatore Tuzzo
18	Norman H. Harris	Elizabeth Fitzpatrick, Anna Stilwell
20	John A. Carr	Mabel Jay, Harold Johnson, Jean Sheridan, Edna Smith, Altheranna Thompson, Mattie Voeste

Appendix A

RELIABILITY COEFFICIENTS, TENTATIVE NORMS, AND RELATED DATA ON STUDY-DEVELOPED TESTS

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TABLE LXXXVIII

Means, Sigmas and Reliability Coefficients[1] of Study-Developed Tests Based on Fall, 1958 Testing of Young (Y), Intermediate (I) and Older (O) Boys and Girls

Test	Group	N	M	σ	r_{II}
Extended Range Test of Readiness for Reading	Y	204	24.32	9.96	.89
Wide Range Test of Mathematical Concepts	Y	195	14.76	6.38	.82
	I	120	17.53	6.44	.81
	O	116	22.13	6.77	.85
Wide Range Test of Reading Achievement	Y	157	60.54	23.42	.95
	I	120	70.43	25.80	.96
	O	116	82.36	23.22	.96
Primary Core Series	Y	196	32.93	7.94	.84
	I	120	36.28	6.61	.79
Advanced Core Series					
Part I	O	116	32.47	6.31	.73
Part II	O	116	39.53	7.20	.75
Pupil Behavior Checklist	Y	186	14.53	6.23	.95
	I	120	14.38	4.36	.83
	O	116	14.01	4.68	.85

1. Froelich's approximation of a Kuder-Richardson formula was used

TABLE LXXXIX

Percentile Norms for the New York City Extended Range Test of Readiness for Reading, Based on Test Results of 342 Pupils (Maximum Score 50)

%ile	Age Interval	7-1 to 9-0 Score	9-1 to 11-0 Score	11-1 to 13-0 Score	13-1 to 15-0 Score	15-1 to 17-0 Score
99	....	40	44	45	47	47
95	....	36	37	41	43	45
90	....	33	35	38	41	43
80	....	30	32	35	37	41
70	....	27	30	33	35	38
60	....	25	28	31	34	35
50	....	23	26	29	32	33
40	....	19	25	27	31	29
30	....	12	23	24	29	27
20	....	7	20	21	26	23
10	....	3	14	16	22	18
5	....	1	10	11	18	15
1	....	0	2	1	5	11

TABLE XC

Percentile Norms for the New York City Wide Range Test of Reading Achievement, Based on Test Results of 1351 Pupils (Maximum Score 123)

%ile	Age Interval	9-1 to 10-0 Score	10-1 to 11-0 Score	11-1 to 12-0 Score	12-1 to 13-0 Score	13-1 to 14-0 Score	14-1 to 15-0 Score	15-1 to 16-0 Score	16-1 to 17-0 Score
99	....	98	104	111	114	121	122	120	115
95	....	85	92	102	104	112	116	113	109
90	....	74	83	95	100	108	112	110	105
80	....	59	70	85	93	102	105	104	97
70	....	51	60	75	87	96	100	100	90
60	....	47	53	66	79	90	96	95	84
50	....	43	47	58	72	83	90	90	77
40	....	40	43	52	64	74	83	83	70
30	....	36	38	46	54	64	72	71	62
20	....	30	35	38	47	55	58	59	53
10	....	21	28	27	38	44	43	46	42
5	....	15	23	19	31	33	32	36	35
1	....	4	14	5	8	7	10	15	19

TABLE XCI

Percentile Norms for the New York City Wide Range Test of Mathematical Concepts, Form A, Based on Test Results of 1865 Pupils (Maximum Score 35)

%ile	Age Interval	7-1 to 9-0 Score	9-1 to 11-0 Score	11-1 to 13-0 Score	13-1 to 15-0 Score	15-1 to 17-0 Score
99	....	29	28	31	33	32
95	....	16	22	27	30	30
90	....	14	19	25	29	29
80	....	11	16	21	26	27
70	....	9	14	19	25	25
60	....	8	12	18	23	23
50	....	7	11	16	22	21
40	....	6	9	14	20	19
30	....	5	8	11	18	16
20	....	4	7	9	15	12
10	....	3	6	6	11	9
5	....	2	4	5	8	7
1	....	0	2	1	3	4

TABLE XCII

Percentile Norms for the New York City Core Achievement Test, Primary Series, Based on Test Results of 1022 Pupils (Maximum Score 50)

Age Interval %ile	7-1 to 9-0 Score	9-1 to 11-0 Score	11-1 to 13-0 Score	13-1 to 15-0 Score	15-1 to 17-0 Score
99	39	45	47	49	49
95	35	39	43	45	46
90	31	37	42	44	45
80	28	34	39	42	43
70	26	32	38	40	41
60	24	31	36	39	39
50	22	29	35	37	38
40	20	27	33	35	36
30	17	25	31	32	33
20	15	23	28	28	30
10	13	19	24	23	27
5	12	16	19	20	25
1	8	8	12	9	23

TABLE XCIII

Percentile Norms for the New York City Core Achievement Test, Advanced Series, Part I, Based on Test Results of 728 Pupils (Maximum Score 50)

%ile	Age Interval	12-1 to 14-0 Score	14-1 to 16-0 Score	16-1 to 18-0 Score
99	....	41	43	44
95	....	38	40	41
90	....	35	38	39
80	....	33	36	36
70	....	32	34	34
60	....	30	33	32
50	....	29	31	30
40	....	28	29	29
30	....	27	28	27
20	....	25	26	25
10	....	23	22	23
5	....	21	19	20
1	....	15	15	14

TABLE XCIV

Percentile Norms for the New York City Core Achievement Test, Advanced Series, Part II, Based on Test Results of 557 Pupils (Maximum Score 60)

%ile	Age Interval	12-1 to 14-0 Score	14-1 to 16-0 Score	16-1 to 18-0 Score
99		55	54	56
95		49	50	52
90		47	48	50
80		44	45	46
70		42	43	44
60		40	41	41
50		38	39	39
40		37	38	37
30		35	36	34
20		32	33	31
10		27	31	27
5		20	28	21
1		1	20	14

TABLE XCV

Percentile Norms for the Pupil Behavior Checklist Based on Test Results of 1877 Pupils (Maximum Score 20)

%ile	Age Interval	7-1 to 9-0 Score	9-1 to 11-0 Score	11-1 to 13-0 Score	13-1 to 15-0 Score	15-1 to 17-0 Score
99	....	20	20	20	20	20
95	....	19	19	19	19	19
90	....	18	18	18	18	18
80	....	17	17	17	17	17
70	....	16	16	16	16	16
60	....	15	14	15	15	15
50	....	13	13	14	14	14
40	....	11	12	12	12	12
30	....	10	10	11	11	10
20	....	8	8	9	9	8
10	....	6	6	6	6	5
5	....	3	4	4	3	3
1	....	1	1	0	0	0

Appendix B

SAMPLE PAGES OF STUDY-DEVELOPED TESTS

PRECEDING PAGE BLANK-NOT FILMED

Administration Manual

Board of Education of the City of New York
Bureau of Educational Research
PN-22-242
5C-9-58

WIDE RANGE TEST
OF
Reading Achievement

By

J. Richard Lepkowski **Rose Marie Tuckett** **Irwin Smalheiser**

Under the Direction of

J. Wayne Wrightstone
Director of Research

George Forlano
Project Director

A Research Product of

THE NEW YORK CITY STUDY OF MENTALLY HANDICAPPED CHILDREN

Cooperative Research Project of the United States Office of Education conducted by the
Board of Education of the City of New York through the University of the State of New York

GENERAL INSTRUCTIONS

A. **Scope of test.** This test is designed to sample reading achievement at Grades One through Five.

B. **Title page.** All information on the title page of each pupil's booklet is to be completed. The teacher should fill out the title page for younger pupils and others who may not be able to do so properly before the test booklets are distributed.

C. **Timing.** A complete administration of the test to an average CRMD class is expected to take 50-60 minutes, exclusive of rest periods. It may be advisable that the test be given in two separate sessions: items 1-21 in one session and items 22-46 in the next. The actual testing is expected to proceed at the rate of about 1 question per minute, except items 38-46, which are allowed a maximum of two minutes each. When those pupils who may reasonably be expected to mark their answers have done so, proceed to the next question. Do not wait for stragglers; to do so would unduly lengthen the testing time.

D. **Reading of questions.** The questions and directions appear in the Administration Manual only, not in the pupil's booklet, (except items 38-46). The teacher should read aloud all material which appears in capital letters. Questions may be repeated if necessary. However, items should be re-read exactly as they are written in the Administration Manual. No clues are to be given. Even when pupils are unfamiliar with the concept being tested, teachers should not amplify upon the test questions or re-state the test questions in their own words.

E. *Recording of answers.* Pupils should answer each question by marking either the "Yes" or the "No" next to the question. Colored pencils, preferably blue, should be distributed for the marking of the answers.

F. *Turning of pages.* Pages *are not* to be turned until all those pupils who might reasonably be expected to answer have done so. Each page is presented to all pupils at the same time. After turning the page, the pupils should fold the left side under their test booklets.

G. *Changing of answers.* Pupils should be instructed to circle any answer they wish to change and then mark the preferred one. If this method of changing answers is too difficult, pupils may be instructed to erase instead.

H. *Prevent copying.* Seating should be arranged to prevent copying. Pupils who present a special problem should be seated away from the rest of the class. If necessary, administer the test in a more suitable room. Pupils should shield their answers from other pupils. *Teachers should mark each copied answer with a large C in the pupil's booklet.* These copied answers will not receive credit.

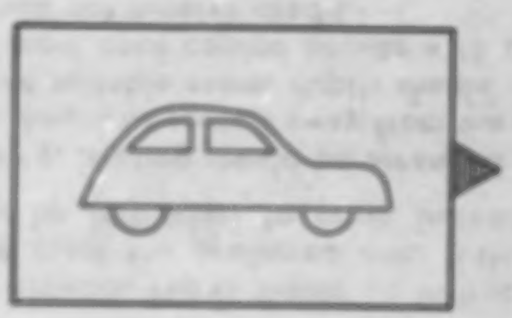
I. *Circulate among the pupils* during the test administration to see that they are on the right page at all times.

J. *Pupils should be periodically encouraged to try each and every item.* There is no penalty for guessing; those who omit items will receive lower scores.

K. *Administer the entire test.* Do not discontinue testing because the questions have become too difficult for your class. (See J. above.)

SPECIFIC DIRECTIONS FOR ADMINISTRATION

1. Before the test booklets are distributed, put the following on the blackboard for a demonstration lesson on how to mark the answer booklets:



cut
cat
car
can

2. As the test booklets are distributed, tell the class not to open them.

3. If the names have not been filled in by you, have the pupils fill in their names, class, and school. Remind them not to open booklets.

4. Then, using the sample item you have drawn on the blackboard, give a demonstration lesson on how pupils *should* mark their answers. Begin the lesson thus:

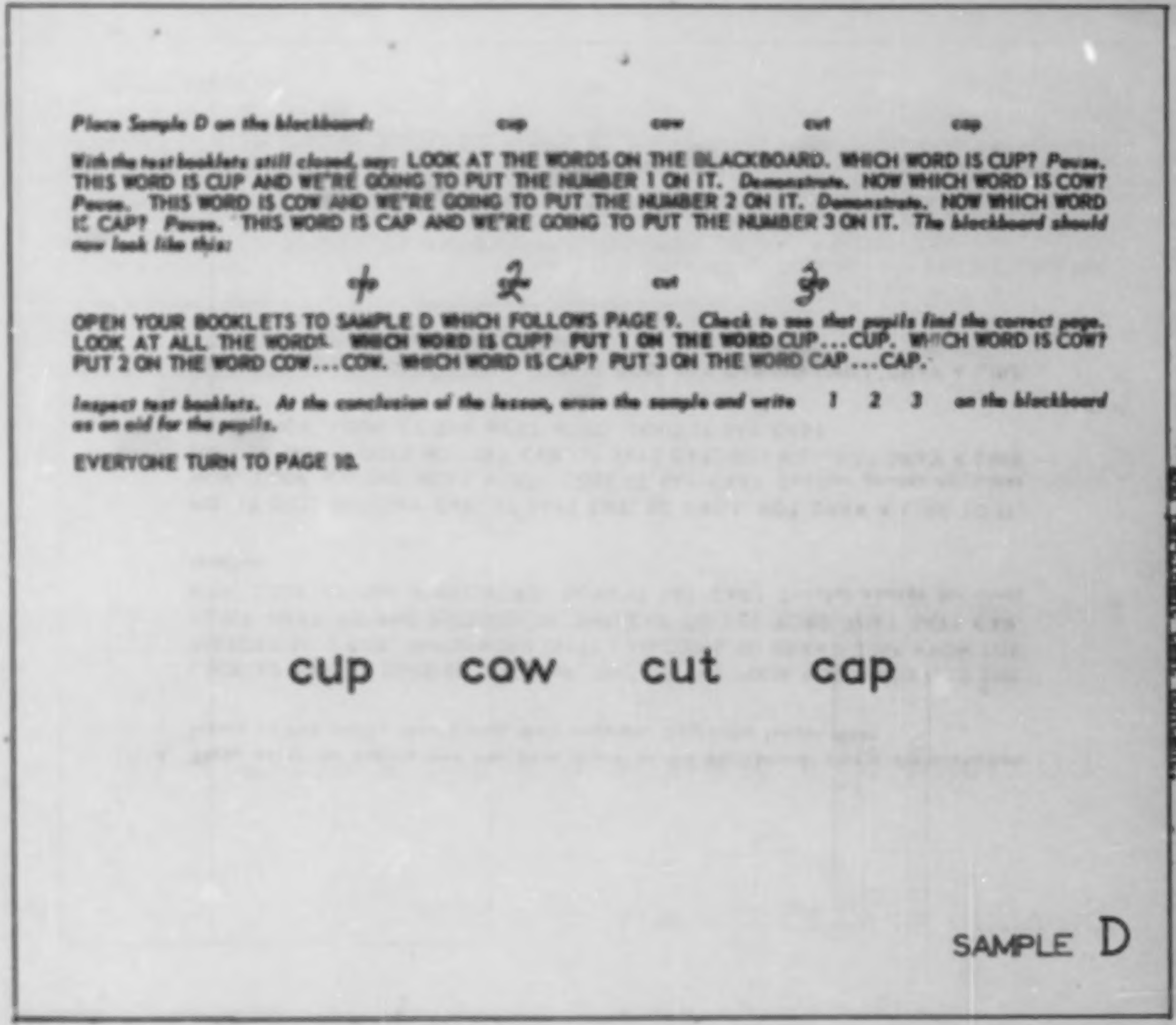
LOOK AT THE PICTURE OF THE CAR. ONE OF THE FOUR WORDS NEXT TO THE PICTURE SAYS CAR. WHICH WORD IS IT? I AM GOING TO DRAW A LINE FROM THE POINT NEXT TO THE PICTURE OF THE CAR TO THE WORD THAT SAYS CAR. NOW, LOOK AT THE FIRST WORD. DOES IT SAY CAR? *Teacher pauses for class reaction.*

NO, IT DOES NOT SAY CAR. IT SAYS CUT, SO I WILL NOT DRAW A LINE TO IT. NOW, LOOK AT THE NEXT WORD. DOES IT SAY CAR? *Teacher pauses for class reaction.* NO, IT DOES NOT SAY CAR. IT SAYS CAT, SO I WILL NOT DRAW A LINE TO IT. NOW, LOOK AT THE NEXT WORD. DOES IT SAY CAR?

Teacher pauses for class reaction. YES, IT DOES SAY CAR, SO I WILL DRAW A LINE TO IT LIKE THIS. *Teacher demonstrates.*

Administration manual gives directions, questions, and page of test booklets.

Test booklet gives only the choice of responses and pertinent test content.



Place Sample D on the blackboard: cup cow cut cap

With the test booklets still closed, say: LOOK AT THE WORDS ON THE BLACKBOARD. WHICH WORD IS CUP? *Pause.* THIS WORD IS CUP AND WE'RE GOING TO PUT THE NUMBER 1 ON IT. *Demonstrate.* NOW WHICH WORD IS COW? *Pause.* THIS WORD IS COW AND WE'RE GOING TO PUT THE NUMBER 2 ON IT. *Demonstrate.* NOW WHICH WORD IS CAP? *Pause.* THIS WORD IS CAP AND WE'RE GOING TO PUT THE NUMBER 3 ON IT. *The blackboard should now look like this:*

1 cup 2 cow cut 3 cap

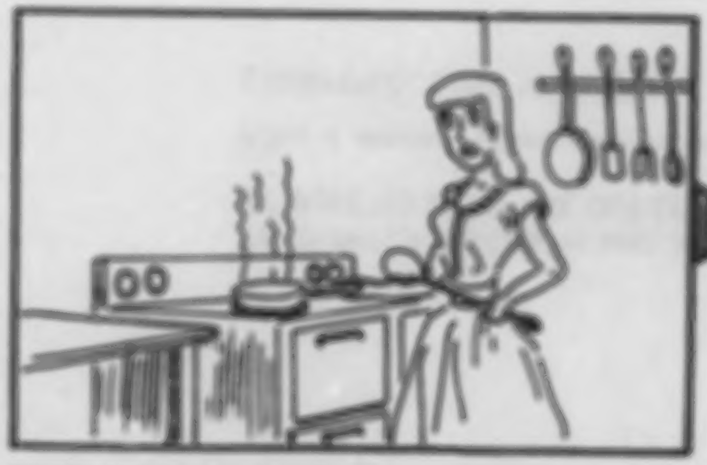
OPEN YOUR BOOKLETS TO SAMPLE D WHICH FOLLOWS PAGE 9. *Check to see that pupils find the correct page.* LOOK AT ALL THE WORDS. WHICH WORD IS CUP? PUT 1 ON THE WORD CUP . . . CUP. WHICH WORD IS COW? PUT 2 ON THE WORD COW . . . COW. WHICH WORD IS CAP? PUT 3 ON THE WORD CAP . . . CAP.

Inspect test booklets. At the conclusion of the lesson, erase the sample and write 1 2 3 *on the blackboard as an aid for the pupils.*

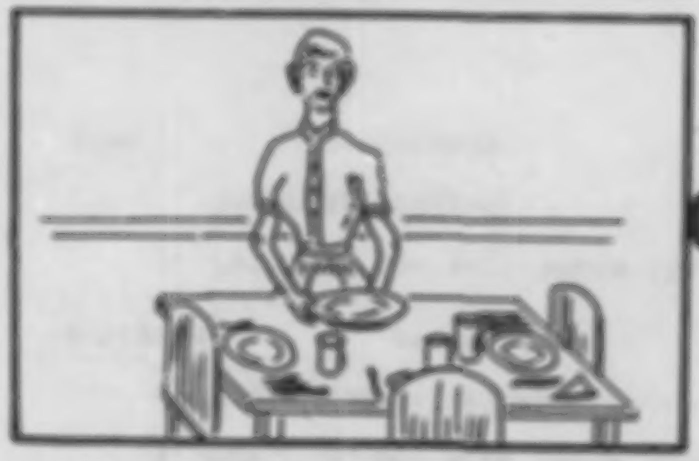
EVERYONE TURN TO PAGE 10.

cup cow cut cap

SAMPLE D



▶



●

The family is having breakfast.

This lady is setting the table.

A woman is cooking dinner.

The family is watching T.V.

Note to teacher: use Sample C to illustrate marking procedure if necessary.

LOOK AT THE PICTURE AT THE TOP OF THE PAGE. IT SHOWS A WOMAN COOKING. DRAW A LINE FROM THE POINT TO THE FIRST WORD OF THE SENTENCE THAT TELLS WHAT THE WOMAN IS DOING.

Encourage pupils to try every item. Circulate about room to be sure pupils are marking this item in the correct manner.

NOW LOOK AT THE PICTURE AT THE BOTTOM OF THE PAGE. IT SHOWS A WOMAN SETTING THE TABLE. DRAW A LINE FROM THE DOT TO THE FIRST WORD OF THE SENTENCE THAT TELLS WHAT THE WOMAN IS DOING.

TURN TO PAGE 29.

Before you can be employed, you must have a Social Security card. This card is very important. Every worker in the country has a different number, and the federal government uses these numbers to keep a record of each person's work history. One important use of this record is to decide how much money each person should receive when he is too old to work. If you should ever lose your Social Security card, apply for a new one immediately.

1. Put X on the word below that was used in the story to tell who must have Social Security cards.

everyone students the government workers soldiers

2. Put X on the word below that tells which level of government runs the Social Security program.

town county city state federal

46

READ THIS PARAGRAPH AND ANSWER BOTH QUESTIONS AT THE BOTTOM OF THE PAGE.
BE SURE TO READ THE QUESTIONS CAREFULLY.

Allow a maximum of two minutes for this item.

EVERYONE CLOSE YOUR BOOKLET.

ADMINISTRATION MANUAL

Board of Education of the City of New York
Bureau of Educational Research
PN 22-242
3C-6-60

Extended Range Test
of
Readiness for Reading

By

J. RICHARD LEPKOWSKI   IRWIN SMALHEISER   ROSE MARIE TUCKETT

Under the Direction of

J. WAYNE WRIGHTSTONE
Director of Research

GEORGE FORLANO
Project Director

A Research Product of

THE NEW YORK CITY STUDY OF MENTALLY HANDICAPPED CHILDREN

Cooperative Research Project of the United States Office of Education conducted by the Board of Education of the City of New York through the University of the State of New York

LOOK AT WHAT IS IN THE CIRCLE. THIS IS A WORD. IT IS A WORD BECAUSE IT SAYS SOMETHING. NOW LOOK BELOW AND FIND ANOTHER WORD THAT LOOKS *JUST LIKE IT*. PUT X ON THAT WORD.

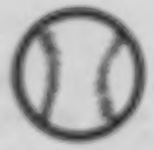
Inspect booklets to be sure all pupils have correctly marked the sample.

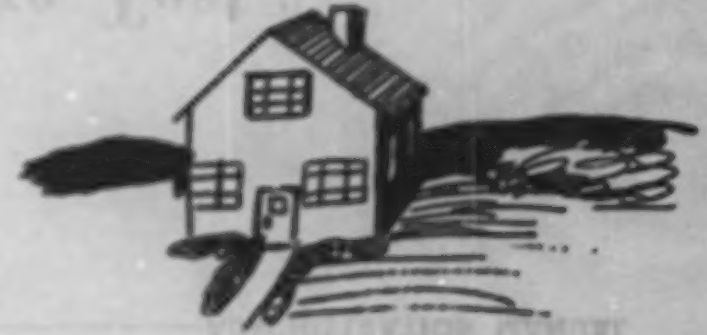
NOW TURN TO THE NEXT PAGE.

boy

hat

boy





Sample B

Administration Manual

Test Booklet

LOOK AT THE WORD IN THE CIRCLE. NOW LOOK BELOW AT THE LINES OF WORDS. FIND *ALL THE WORDS* THAT ARE LIKE THE WORD IN THE CIRCLE. PUT X ON EVERY WORD THAT LOOKS LIKE THE WORD IN THE CIRCLE.

CLOSE YOUR BOOKLETS.

See following page for further directions.

tops

Here are tops.
The tops are toys.
The tops are not pots.
Spin the tops on the spot.
These tops stop.

Administration Manual

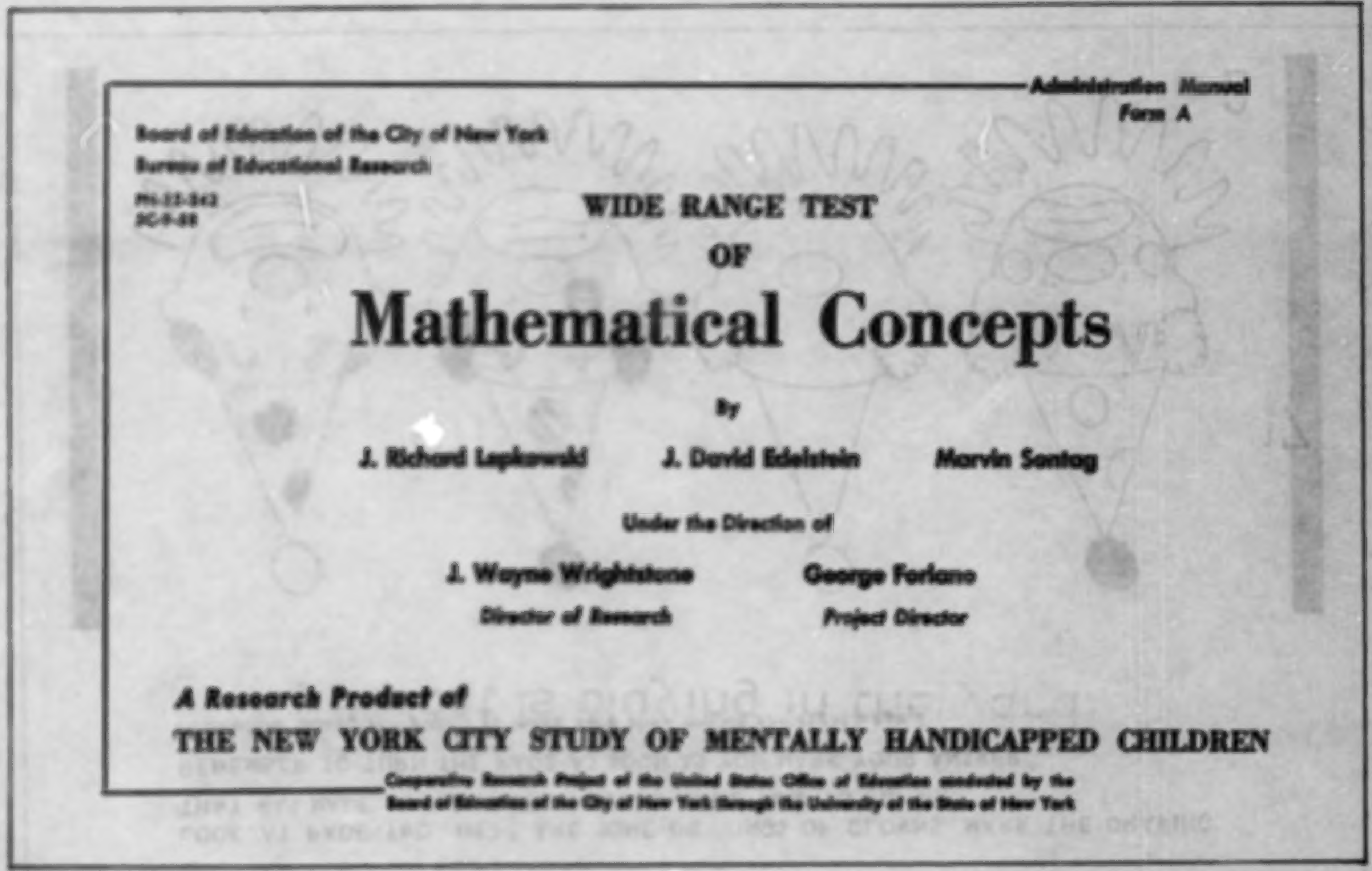
Test Booklet

17

The cat is playing in the yard.

LOOK AT THE LINE OF WORDS. FIND THE *LAST* WORD. PUT X ON IT.

NOW TURN TO THE NEXT PAGE.



Administration Manual
Form A

Board of Education of the City of New York
Bureau of Educational Research

PN-22-242
2C-9-68

WIDE RANGE TEST
OF
Mathematical Concepts

By

J. Richard Lepkowski **J. David Edelstein** **Marvin Sontag**

Under the Direction of

J. Wayne Wrightstone
Director of Research

George Forlano
Project Director

A Research Product of
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Cooperative Research Project of the United States Office of Education conducted by the Board of Education of the City of New York through the University of the State of New York

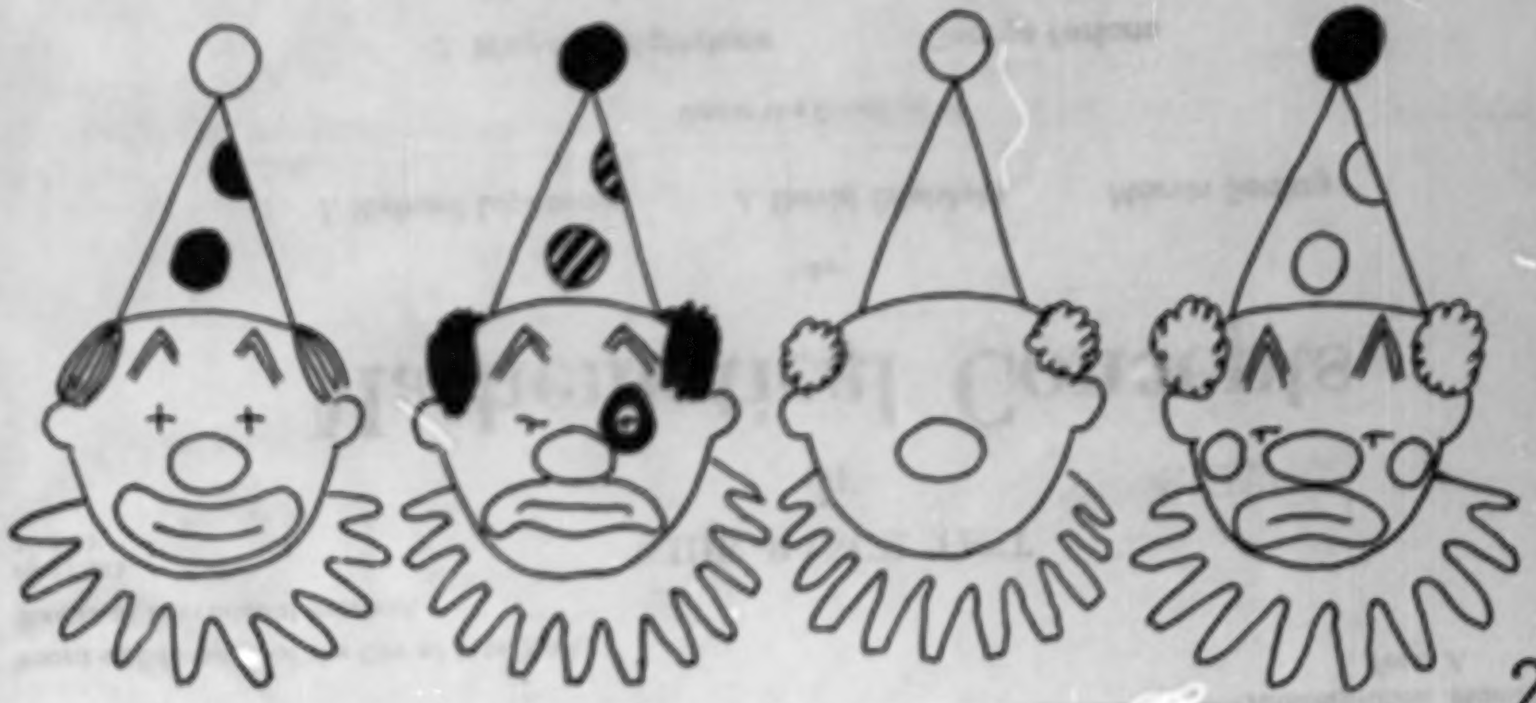
Administration Manual

Test Booklet

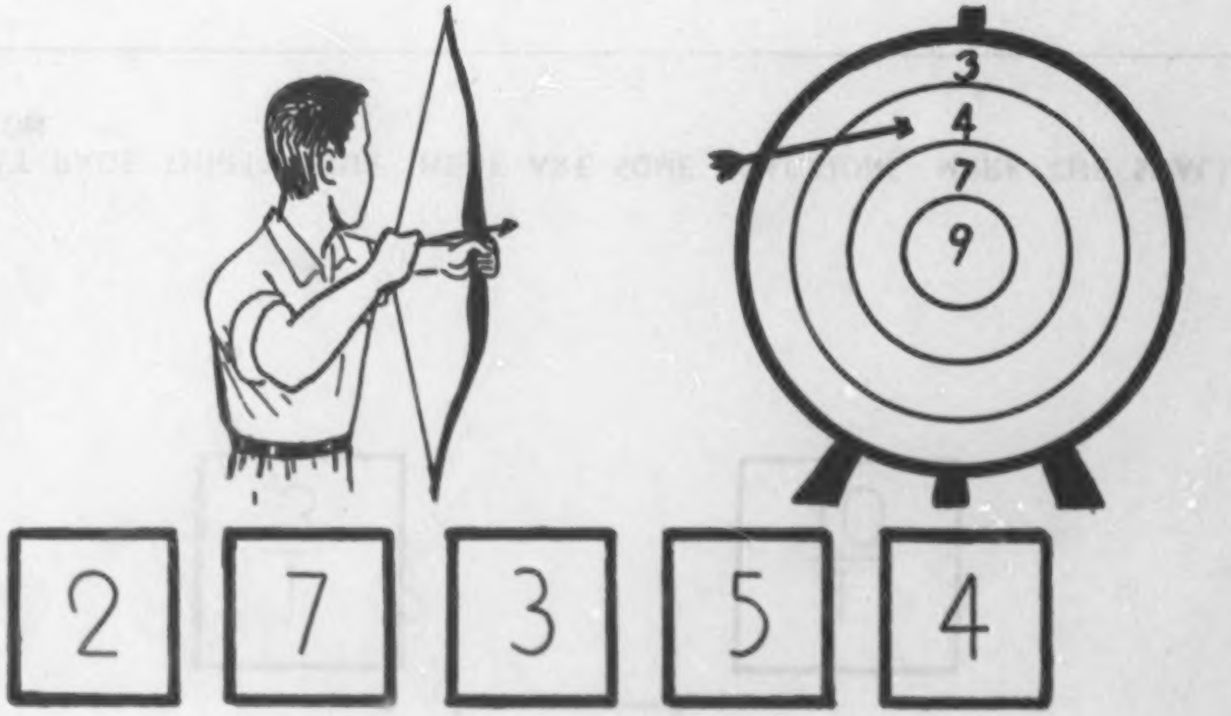
LOOK AT PAGE TWO. HERE ARE SOME DRAWINGS OF CLOWNS. MARK THE DRAWING THAT WAS MADE BY A BOY WHO NEEDED MORE TIME TO FINISH.

REMEMBER TO TURN THE PAGE AS SOON AS YOU MARK YOUR ANSWER.

(Circulate among the pupils to make sure they are on the right page.)



2

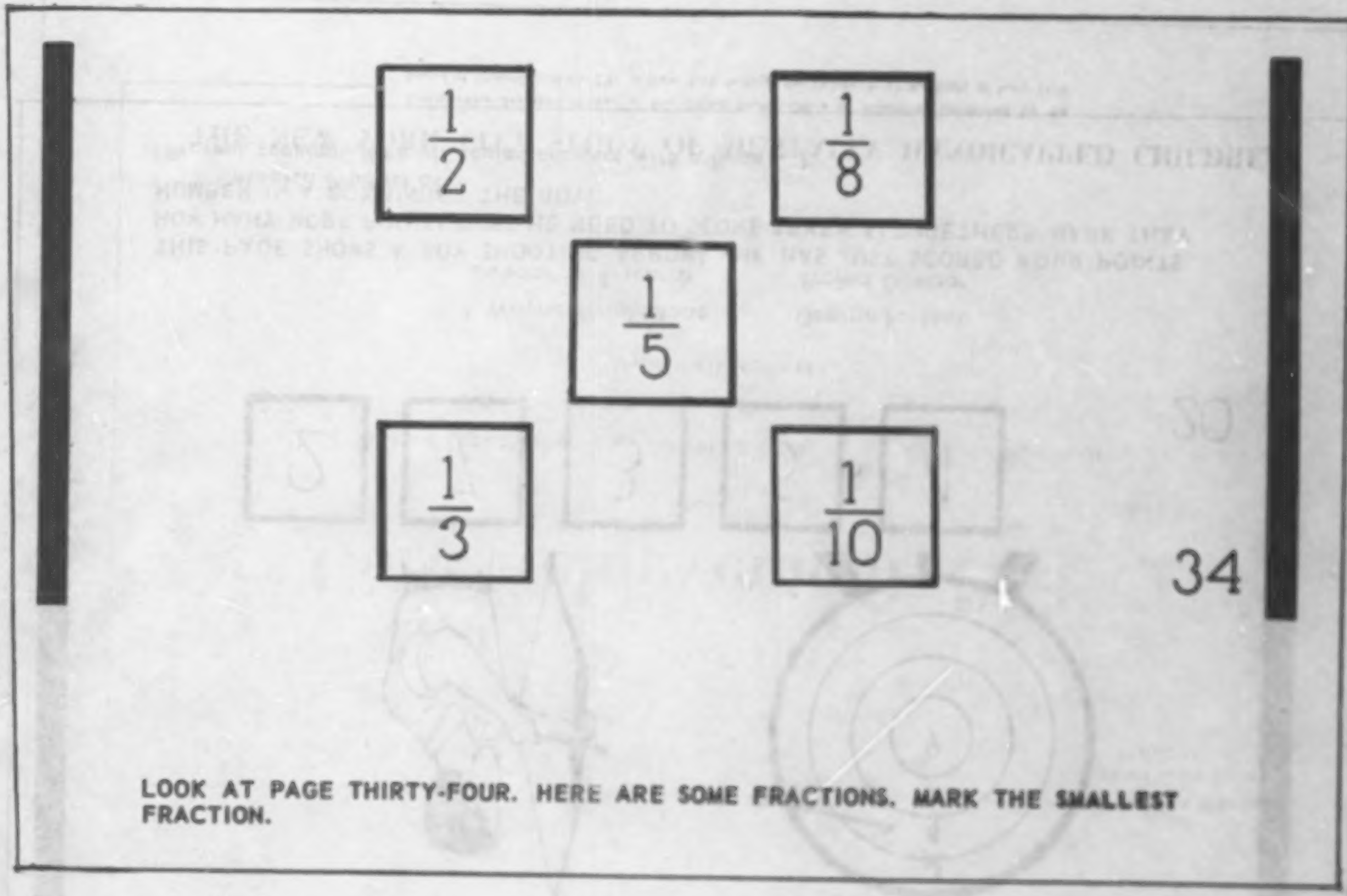


20

THIS PAGE SHOWS A BOY SHOOTING ARROWS. HE HAS JUST SCORED FOUR POINTS. HOW MANY MORE POINTS DOES HE NEED TO SCORE SEVEN ALTOGETHER? MARK THAT NUMBER IN A BOX UNDER THE BOY.

(Prevent copying. Mark all copied answers with a large C.)

Test Booklet



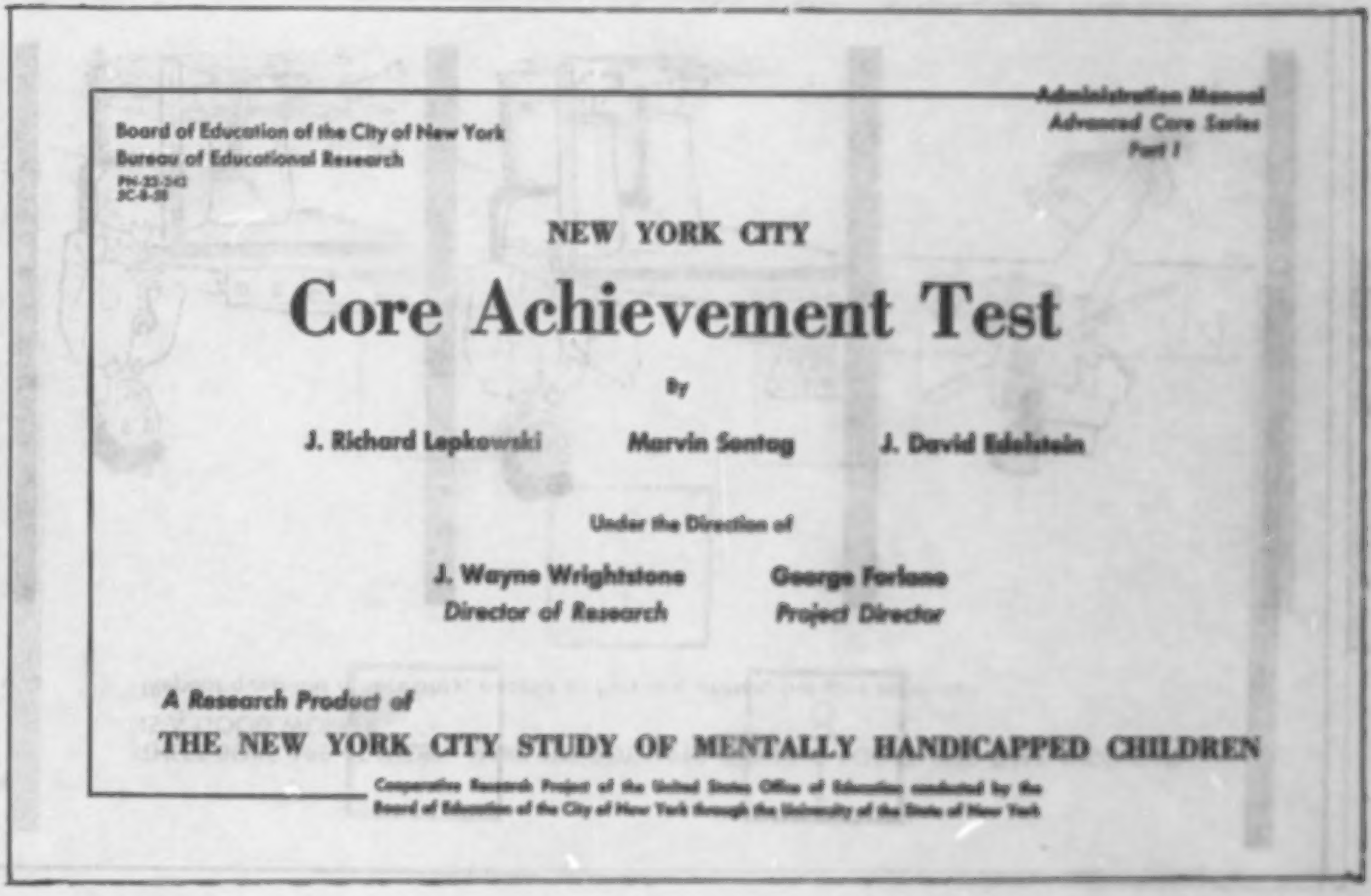
34

$\frac{1}{2}$ $\frac{1}{8}$

$\frac{1}{5}$

$\frac{1}{3}$ $\frac{1}{10}$

LOOK AT PAGE THIRTY-FOUR. HERE ARE SOME FRACTIONS. MARK THE SMALLEST FRACTION.



Board of Education of the City of New York
Bureau of Educational Research
PN-23-242
SC-8-28

Administration Manual
Advanced Core Series
Part I

NEW YORK CITY

Core Achievement Test

By

J. Richard Lepkowski **Marvin Santag** **J. David Edelstein**

Under the Direction of

J. Wayne Wrightstone
Director of Research

George Forlano
Project Director

A Research Product of

THE NEW YORK CITY STUDY OF MENTALLY HANDICAPPED CHILDREN

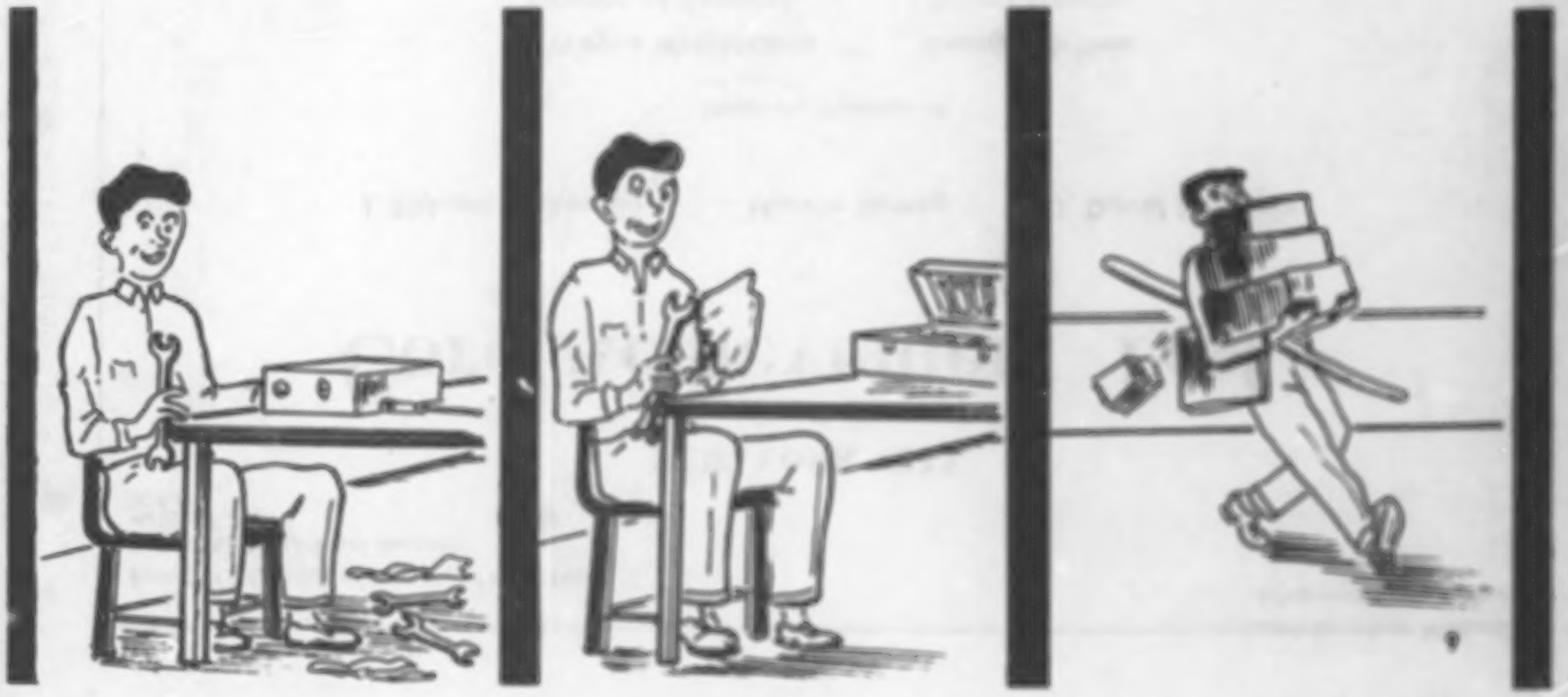
Cooperative Research Project of the United States Office of Education conducted by the Board of Education of the City of New York through the University of the State of New York

Administration Manual

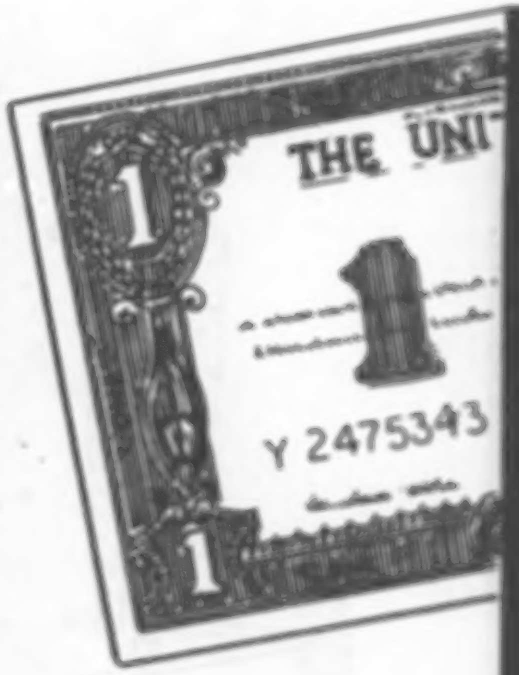
Test Booklet

THESE BOYS ARE AT WORK. MARK THE BOY WHO IS DOING SOMETHING THAT SHOWS HE IS A GOOD WORKER.

(Repeat questions if necessary, exactly as they are written, but give no clues.)



PAGE SIXTEEN SHOWS SOME MONEY. A MAN WORKS IN A FACTORY FOR ONE DOLLAR AN HOUR. HE GETS PAID TIME-AND-A-HALF WHEN HE WORKS OVERTIME. MARK THE PICTURE THAT SHOWS HOW MUCH HE WILL GET PAID FOR EACH HOUR OVERTIME.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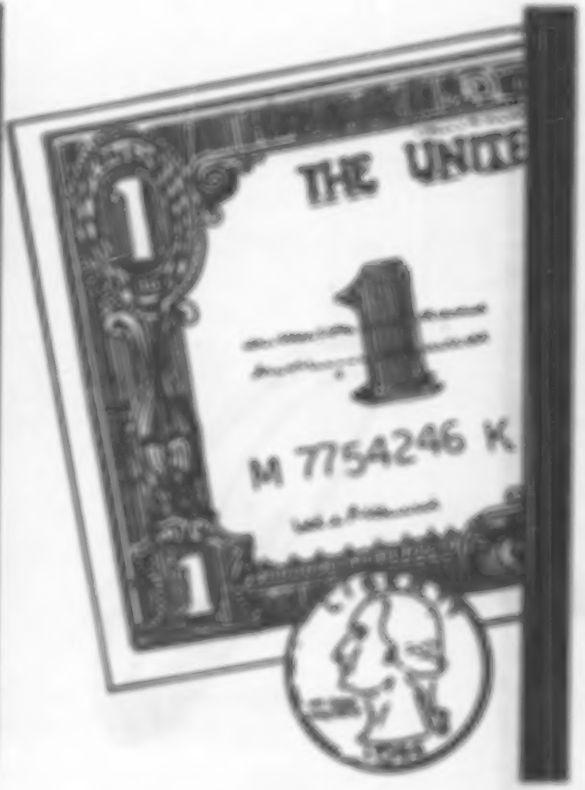
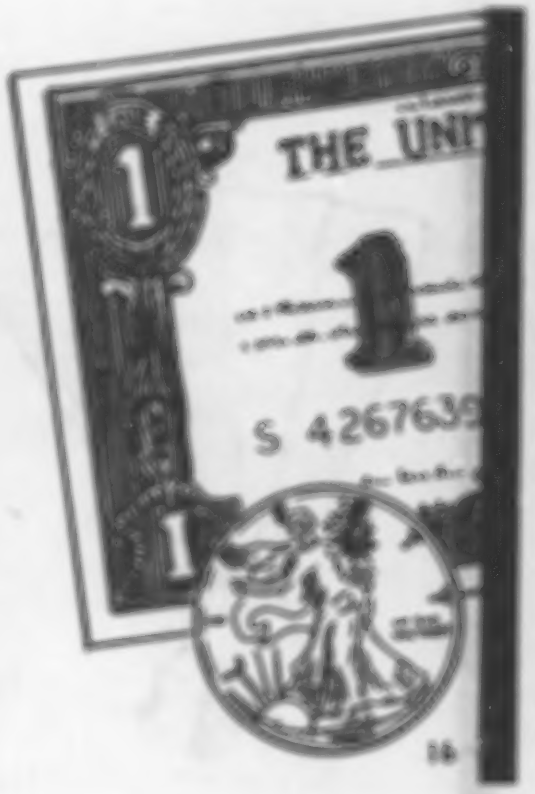

THE UNITE
1
M 7754246 K
LIBERTY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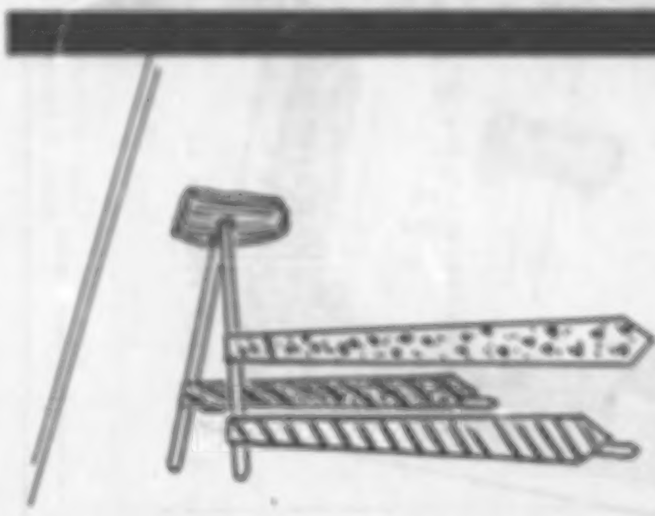
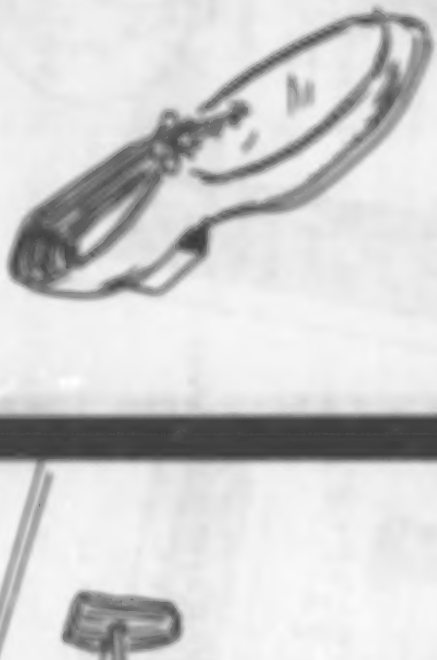
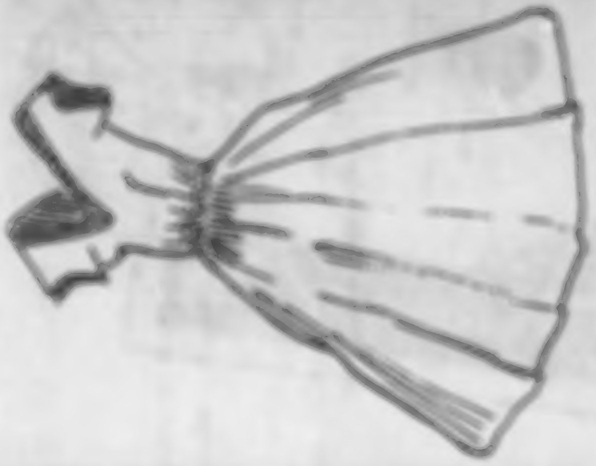
Administration Manual

Test Booklet







PAGE FIFTY SHOWS THINGS TO WEAR. MARK THE ONE THAT CANNOT BE DRY CLEANED.

BOARD OF EDUCATION OF THE CITY OF NEW YORK
BUREAU OF EDUCATIONAL RESEARCH

PN22-242
SC-8-58

Administration Manual
Advanced Core Series
Part II

New York City
Core Achievement Test

by

J. Richard Lepkowski **Marvin Sontag** **J. David Edelstein**

under the Direction of

J. Wayne Wrightstone
Director of Research

George Forlano
Project Director

A Research Product of

THE NEW YORK CITY STUDY OF MENTALLY HANDICAPPED CHILDREN

Cooperative Research Project of the United States Office of Education conducted by the Board of Education of the City of New York through the University of the State of New York

GENERAL INSTRUCTIONS

A. *Scope of the test.* This test is designed to sample achievement in certain aspects of the upper levels of the BCRMD Core curriculum.

B. *Title page.* All information on the title page of each pupil's booklet is to be completed. The teacher should fill out the title page for younger pupils and others who may not be able to do so properly *before the test booklets are distributed.*

C. *Timing.* A complete administration of the test to an average CRMD class is expected to take 30-35 minutes, exclusive of rest periods. A brief rest period is suggested after page 7, but rest periods may be taken as needed. When those pupils who may reasonably be expected to mark their answers have done so, proceed to the next question. Do not wait for persistent stragglers; to do so would unduly lengthen the testing time.

D. *Reading of questions.* The questions appear in both the Administration Manual and in the pupil's booklet. The introductory sentence before each item is to be read aloud to the class. The test questions in turn are to be read to the class. This test is not meant to be self-administered. *Questions may be repeated if necessary.* However, items should be re-read exactly as they are written in the Administration Manual. No clues are to be given. Even when pupils are unfamiliar with the concept being tested, teachers should not amplify upon the test questions or re-state the test questions in their own words.

E. Recording of answers. A properly marked sample question is provided in the Administration Manual for each type of item. Colored pencils, preferably blue, should be distributed for the marking of answers.

F. Turning of pages. Pages are not to be turned until all those pupils who might reasonably be expected to answer have done so. Each page is presented to all pupils at the same time. After turning the page, the pupils should fold the left side under their test booklets.

G. Changing of answers. Pupils should be instructed to circle any answer they wish to change and then mark the preferred one. If this method of changing answers is too difficult, pupils may be instructed to erase instead.

H. Prevent copying. Seating should be arranged to prevent copying. Pupils who present a special problem should be seated away from the rest of the class. If necessary, administer the test in a more suitable room. Pupils should shield their answers from other pupils. Teachers should mark each copied answer with a large C in the pupil's booklet. These copied answers will not receive credit.

I. Circulate among the pupils during the test administration to see that they are on the right page at all times.

J. Pupils should be periodically encouraged to try each and every item. There is no penalty for guessing; those who omit items will receive lower scores.

K. Administer the entire test. Do not discontinue testing because the questions have become too difficult for your class. (See J. above.)

Specific Directions for Administration

Important Note: Read these directions to decide whether you may wish to use the *blackboard* to demonstrate how pupils should mark their answers. If you plan to give such a demonstration, put Sample Question A on the blackboard in advance.

In this booklet the print in capital letters is to be read aloud to the class before each new question is presented. Reminders to the teacher on test administration appear in italics and are not to be read aloud.

Begin the test by reading aloud the following:

THIS BOOKLET HAS QUESTIONS PRINTED IN IT. I AM GOING TO READ EACH QUESTION TO YOU, AND YOU WILL ANSWER *EACH QUESTION* BY MARKING EITHER A "YES" OR A "NO" IN YOUR BOOKLET.

OPEN YOUR BOOKLETS TO THE FIRST PAGE (Sample A). THE QUESTIONS ON THIS PAGE ARE ABOUT *WHERE WE ARE*, RIGHT NOW. LOOK AT YOUR BOOKLETS AND READ ALONG WITH ME SILENTLY: "ARE-WE-*IN-SCHOOL?*" "YES" OR "NO?"

IF YOU THINK WE *ARE* IN SCHOOL, MARK THE *"YES"* ON LINE *A* WITH AN X. IF YOU THINK WE ARE *NOT* IN SCHOOL, MARK THE *"NO"* ON LINE *A*. *(Circulate among the pupils to make sure that each pupil has marked the "yes" on line A.)*

■

NOW LOOK AT LINE *B*. "*ARE-WE-AT-HOME?*" "YES" OR "NO?" IF YOU THINK WE *ARE* AT HOME, MARK THE "YES" ON LINE *B*. IF YOU THINK WE ARE *NOT* AT HOME, MARK THE "NO" ON LINE *B*. *(Check to see that the "No" is properly marked with an X on line B.)*

NOW LOOK AT LINE C. "ARE-WE-*OUTSIDE?*" MARK EITHER "YES" OR "NO." *(Check to see that "No" is properly marked on line C.)*

NOW LOOK AT LINE *D*. "ARE-WE-*IN-A-ROOM?*" "YES" OR "NO?" *(Check to see that "Yes" is properly marked on line D.)*

Do not proceed until each pupil understands how to record the answers. For the remainder of the test, pupils should be periodically reminded to check either "Yes' or "No" to each question.

Toward the beginning of the test, repeat the lead-in part of the question for choices A, B, C and D. From page three on, repeating the lead-in phrase is optional.

It is important that pages *not* be turned until all those pupils who might reasonably be expected to answer have done so. *Each page is presented to all pupils at the same time.*

Additional instructions and reminders appear throughout the remainder of this Manual.

Repeat questions if necessary, exactly as they are written, but give no clues.

ON PAGE FIVE THERE ARE SOME QUESTIONS ABOUT A NEW WORKER IN A FACTORY WHO WANTS THE OTHER WORKERS TO LIKE HIM.

Can a worker make friends with the other workers by

A. eating lunch with them? ………………… Yes No

B. borrowing money from them? ………………… Yes No

C. saying that he knows how to do everything best? ………… Yes No

D. spending time with them after working hours? ………… Yes No

Appendix C

INSTRUCTIONS FOR THE NEW YORK CITY MANUAL DEXTERITY FORM BOARD TEST

5

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THE NEW YORK CITY MANUAL DEXTERITY FORM BOARD TEST

by

George Forlano and J. Richard Lepkowski

Apparatus: A 12" X 12" board containing 36 round holes of 1 1/8 inches in diameter

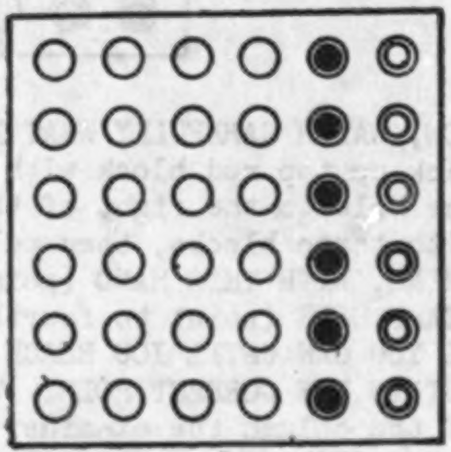
36 cylindrical blocks measuring 1" in diameter and 1" high. One flat surface of the blocks is painted red and the other flat surface, white.

Two 6" X 6" cardboard shields

TEST I - Right Hand Manipulation

Board Position: First column on right side filled with blocks, white side up.

Second column on right side filled with blocks, red side up.

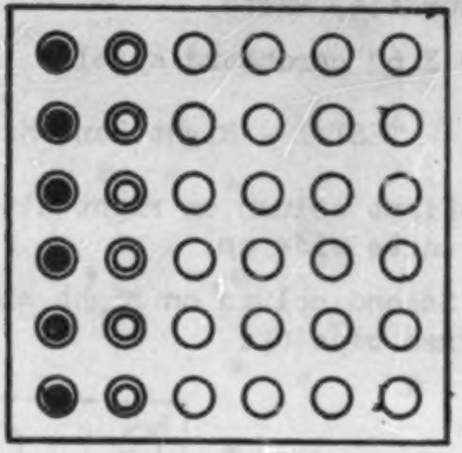


Directions: NOW, WATCH CAREFULLY WHAT I AM GOING TO DO. Examiner is to pick one white block (top one) with his right hand and place it in the hole to the left of the adjacent red block. Do this with three white blocks, then tell subject: NOW, YOU DO THE SAME THING WITH THIS HAND (points to subject's right hand). START HERE (point to fourth white block) AND KEEP GOING AS FAST AS YOU CAN UNTIL YOU REACH THE BOTTOM. MAKE SURE THAT EACH BLOCK GOES INTO THE HOLE. When subject has moved the sixth white block, the examiner says: NOW KEEP DOING THE SAME THING STARTING AT THE TOP AGAIN LIKE THIS (examiner demonstrates by moving the top red block to the left-passing over the adjacent white one and placing the red block in the top hole of the fourth column. Demonstrate again using the second red block from the top. KEEP DOING THIS UNTIL YOU HAVE REACHED THE BOTTOM. Time starts when subject commences at top of third column from the right.

WORK AS FAST AS YOU CAN UNTIL ALL THE BLOCKS HAVE BEEN MOVED OVER HERE. (Point to last two columns on the left). Watch subject. When he reaches the fifth block in the third column, say: REMEMBER YOU ARE NOT TO STOP WHEN YOU REACH THE BOTTOM, BEGIN AGAIN AT THE TOP OF THE NEXT COLUMN. Time stops when subject fills all holes in last column with red blocks.

TEST II - Left Hand Manipulation

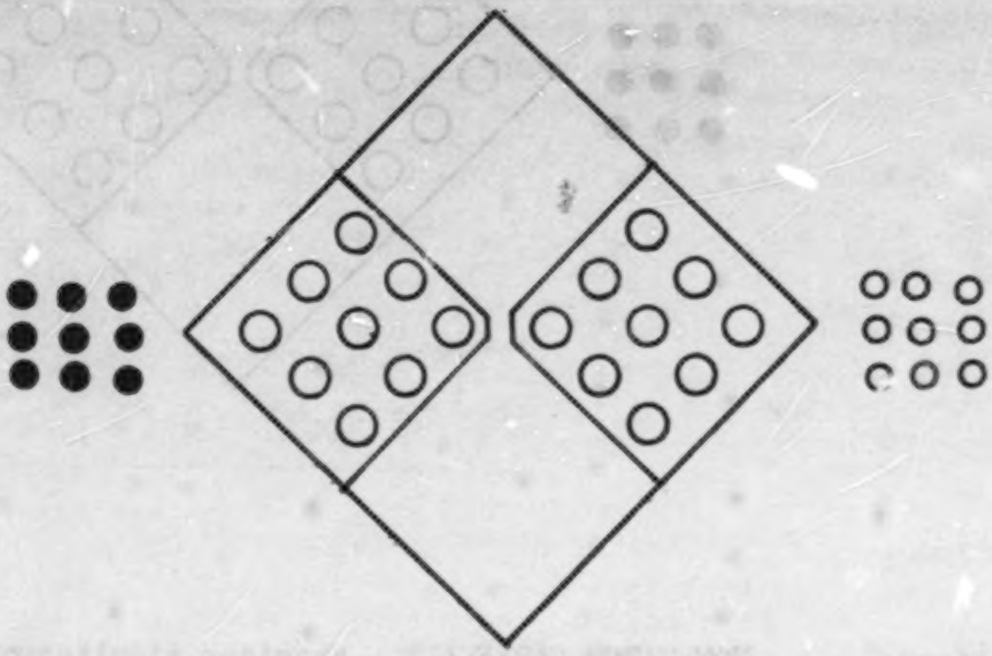
Board Position: Same as ending position in Test I as shown



Directions: NOW, WATCH CAREFULLY WHAT I AM GOING TO DO. Examiner is to pick up top red block with his left hand and place it in the hole to the right of the adjacent white block. Do this with three blocks, then tell subject: NOW YOU DO THE SAME THING, WITH THIS HAND (points to subject's left hand). START HERE (point to fourth block) AND KEEP GOING AS FAST AS YOU CAN UNTIL YOU REACH THE BOTTOM. THE BLOCKS MUST BE PUT IN THE CORRECT HOLE. When subject reaches the bottom of the column the examiner says, NOW, KEEP DOING THE SAME THING STARTING AT THE TOP AGAIN LIKE THIS (examiner demonstrates two blocks) KEEP DOING THIS UNTIL YOU HAVE REACHED THE BOTTOM. Time starts when subject commences at top of third column from the left. NOW, YOU TRY IT, WORK AS FAST AS YOU CAN UNTIL ALL THE BLOCKS HAVE BEEN MOVED OVER HERE (point to last two columns). Watch subject. When he reaches the fifth block in the third column say: REMEMBER YOU ARE NOT TO STOP WHEN YOU REACH THE BOTTOM, BEGIN AGAIN AT THE TOP OF THE NEXT COLUMN. Time stops when subject fills all holes in last column with white blocks.

TEST III - Alternate Hand Coordination

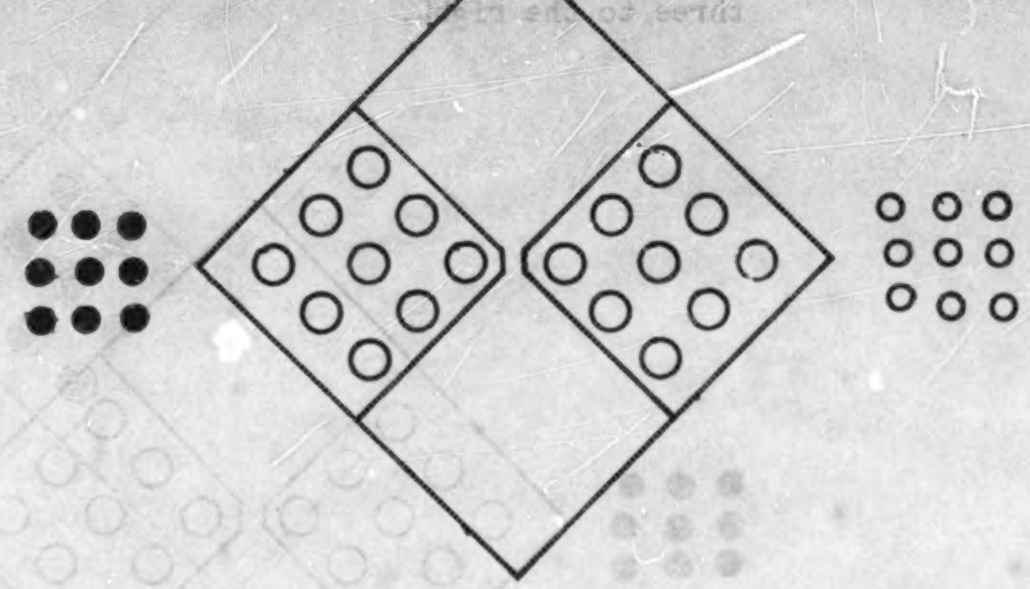
Board Position: Set board diagonally. Cover top and bottom quadrants with shields so that only right and left quadrants are exposed. Beside the board, set 9 red blocks in rows of three to the left and set 9 white blocks in rows of three to the right.



Directions: NOW WATCH CAREFULLY WHAT I AM GOING TO DO. Examiner is to pick up one white block with his right hand and cross-over to place it in any hole in the left quadrant. Then he is to pick up one red block with his left hand and cross-over to place it in any hole in the right quadrant. Repeat this process until three blocks have been placed in each quadrant, then say to subject: NOW YOU DO THE SAME THING, FIRST USE THIS HAND (points to subject's right hand) AND PLACE A WHITE BLOCK LIKE THIS. (Demonstrate) YOU ARE NOT TO PICK UP ANOTHER BLOCK UNTIL YOU HAVE PLACED THE BLOCK IN YOUR HAND INTO A HOLE. NOW YOU TRY IT (allow subject to place three blocks on each side correctly). When task is understood say: STOP, NOW YOU ARE GOING TO START FROM THE BEGINNING. (Return blocks to starting position.) NOW GO AHEAD — FILL THE HOLES AS QUICKLY AS POSSIBLE. Start timing. Stop timing when all holes are properly filled.

TEST IV - Two-Hand Coordination

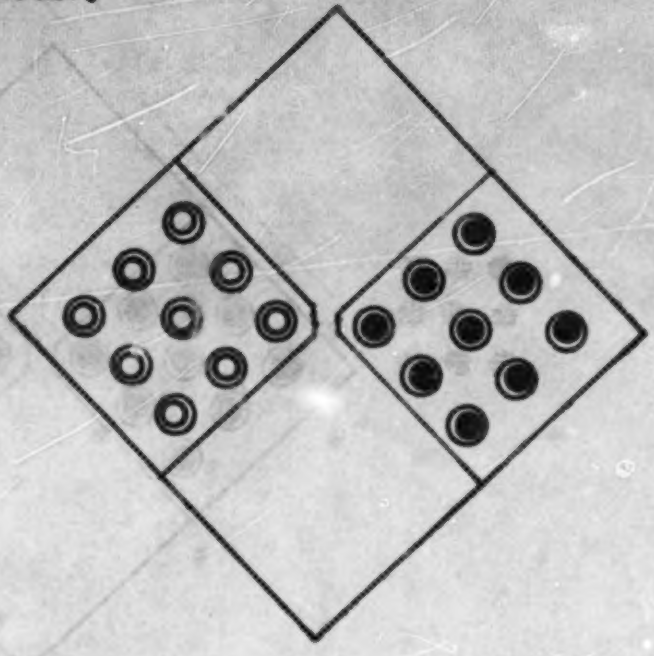
Board Position: Same as in Test III



Directions: NOW WATCH CAREFULLY. Examiner simultaneously picks up one white block with his right hand and places it in the right quadrant and one red block in his left hand and places it in the left quadrant. Repeat this until three holes have been placed in each quadrant. Then say to subject: YOU MUST USE BOTH HANDS AT THE SAME TIME TO PICK UP THE BLOCKS AND PLACE THEM IN THE HOLES. GO AHEAD. (After subject has placed 3 blocks in each quadrant correctly, say:) STOP, NOW YOU WILL DO IT FROM THE BEGINNING. (Return board to starting position.) GO AHEAD, DO IT AS FAST AS YOU CAN. REMEMBER YOU MUST USE BOTH HANDS AT THE SAME TIME AND PUT THE BLOCKS IN THE HOLES AT THE SAME TIME. DO NOT STOP UNTIL ALL THE HOLES ARE FILLED. Start timing. Stop timing when right quadrant is filled with white blocks and the left quadrant with red blocks.

TEST V - One Hand-finger Coordination

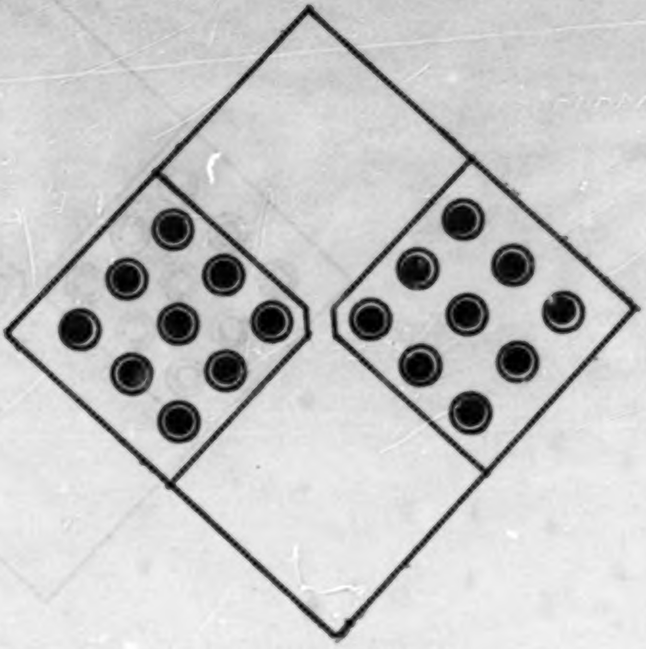
Board Position: Set board diagonally using shields so only the right and left quadrants are exposed. The left quadrant is filled with white blocks, the right quadrant is filled with red blocks.



Directions: NOW WATCH CAREFULLY: Examiner, using his preferred hand, is to pick up one red block first, and then one white block, and holding both blocks in his hand, he should first place the white block in the red (right) quadrant and then the red block in the white (left) quadrant. Repeat this until six blocks have been transferred. Then say to subject: NOW YOU DO IT. USE ANY HAND YOU WISH. When subject has transferred three red and three white blocks say STOP, NOW YOU WILL START FROM THE BEGINNING. (Return blocks to starting position). GO AHEAD. DO IT AS QUICKLY AS YOU CAN. DO NOT STOP UNTIL ALL THE BLOCKS HAVE BEEN SWITCHED. Start timing. Stop timing when all red blocks are properly placed in the left quadrant and all white blocks in the right quadrant.

TEST VI - Two-Hand Simultaneous Coordination

Board Position: Set board diagonally using shields so that only the left and right quadrants are exposed. Fill both quadrants with red blocks.



Directions: NOW WATCH CAREFULLY. Examiner, using both hands simultaneously, picks one block up from the right quadrant with his right hand and one block up from the left quadrant with his left hand. Turn them over and place each (white top showing) in its original hole. Repeat this with three blocks. Then say to subject: NOW YOU TRY IT. After subject has successfully turned six blocks, three on each side simultaneously with both hands, say: STOP, NOW YOU WILL START FROM THE BEGINNING. (Return blocks to starting position.) GO AHEAD AND DO IT AS FAST AS YOU CAN. REMEMBER YOU MUST USE BOTH HANDS AT THE SAME TIME. DO NOT STOP UNTIL ALL THE BLOCKS HAVE BEEN TURNED. Start timing. Stop timing when all blocks have been properly turned and placed.

SCORING PROCEDURE

Subjects are permitted three attempts on each test to complete the task.[1] The score for each sub-test is the time required to complete the task on the first, second or third attempt. If more than 120 seconds is required the subject is given a ceiling score of 120. The average of the scores on each of the six tests yields the overall score.

---

[1] For example, if a subject at his first attempt shows that he does not understand how to proceed, the directions are again given. Even if he fails to understand and cannot proceed on his second attempt, the subject is given the directions once again. If he fails on his third attempt he receives a time score of 120. However, should the examinee succeed on his second attempt or on his third attempt his score is the number of seconds it took him to complete the task at the attempt that proved successful.

Appendix D

THE NEW YORK PAPER PATTERN CUTTING TEST AND QUALITY TIME SCORE

PAPER PATTERN CUTTING TEST

by
J. Richard Lepkowski

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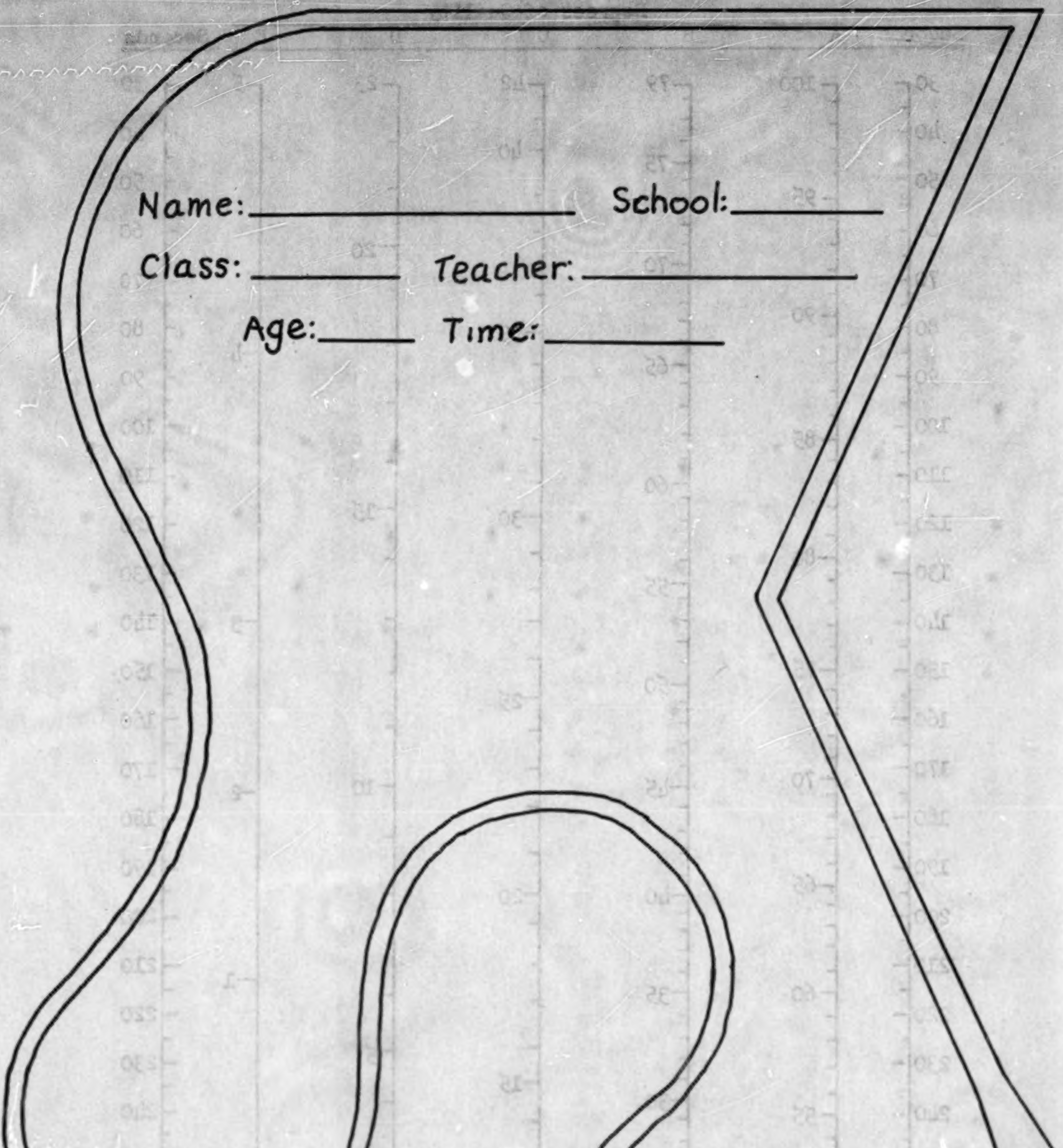
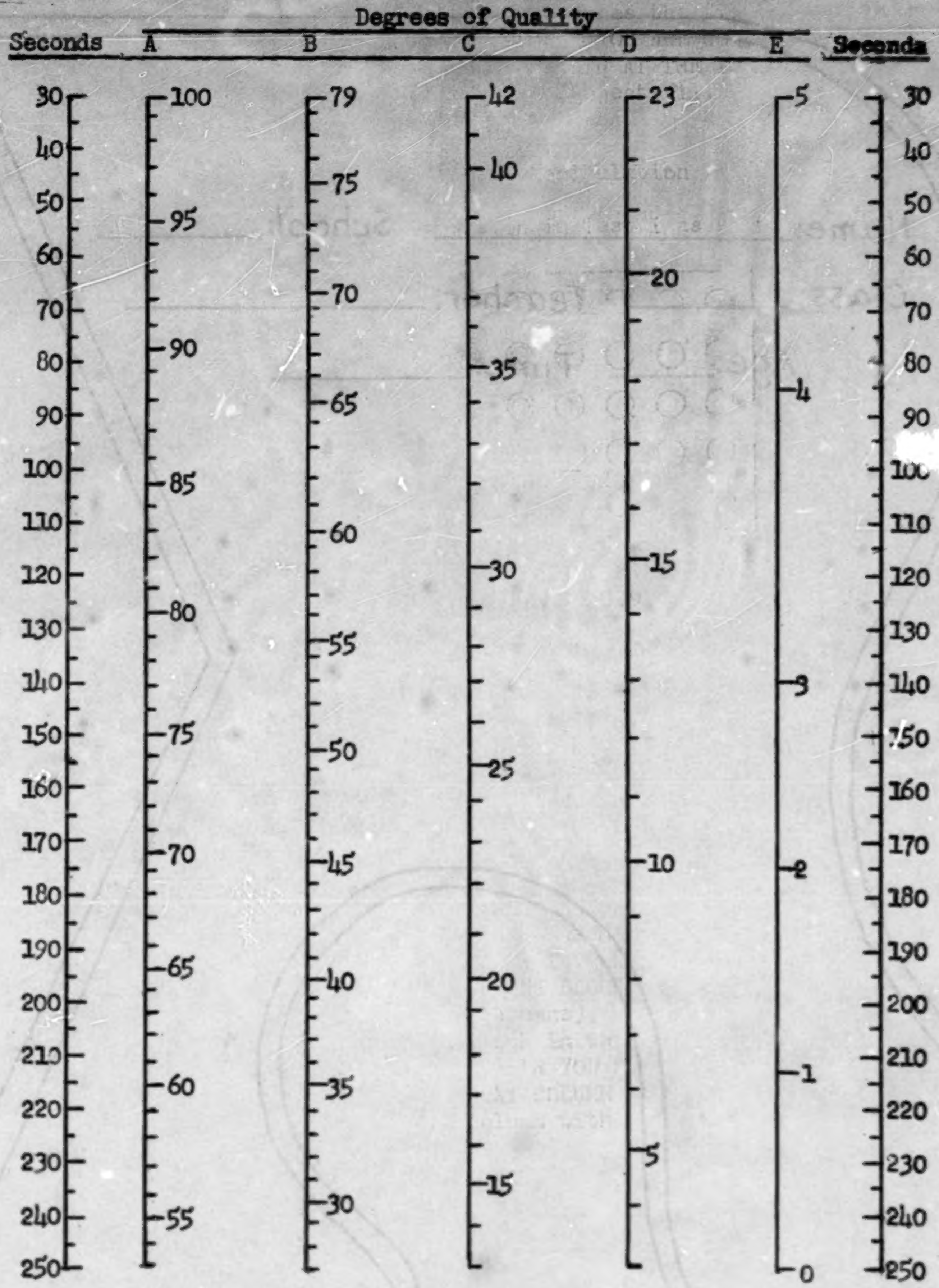


Name: ____________________ School: __________

Class: __________ Teacher: ________________

Age: _____ Time: __________

QUALITY-TIME SCORE



Appendix E

PUPIL INTERVIEW FORMS

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Psych____
Date____
School____
Teacher:
____

Board of Education of the City of New York
New York City Study of Mentally Handicapped Children
Bureau of Educational Research

PUPIL INTERVIEW

Tk____ Lev____

I. Personal Information

Cor. Incor.

1. What is your name....your whole name?____ 1.____ ____

2. Where do you live? (Address)____ 2.____ ____

3. a- When is your birthday?____ 3.a-____ ____
   b- What year were you born?____ b-____ ____

4. What is today's date?____
   (If child does not supply complete information, ask whichever of the following questions are appropriate:)
   a- What month is this?____ 4.a-____ ____
   b- What day of the month is this?____ b-____ ____
   c- What year is this?____ c-____ ____

II. Interests - Activities

5. Do you travel on the subway or bus by yourself?____ 5. Y____ N____
   (Where did you go?)____

6. Do you have a part-time or after-school job?____ 6. Y____ N____
   ____

7. Do you help around the house?____ 7. Y____ N____
   (What do you do?)____
   ____

8. Do you do anything in your spare time?____ 8. Y____ N____
   (What?)____

9. Do you make or fix things?____ 9. Y____ N____
   (What?)____

10. Do you belong to a club?____ 10. Y____ N____
    (What kind of a club?)____

11. Do you look at newspapers, magazines?____ 11. Y____ N____
    (Which ones?)____

12. Do you play games with your friends?____ Often?____ 12. Y____ N____
    (What kind?)____

13. What else would you like to do if you had the chance?
    ____
    ____

PUPIL INTERVIEW CONT'D

III. Vocational Aspirations

14. What would you like to be when you grow up?______	14. V.A.________?___
15. What does a (X) do?______	15. Voc. Knowledge G______ P______
16. How do you get to be a (X)?______	16. Voc. Knowledge G______ P______

IV. School Attitudes

17. Do you like school?______ Why?______	17. Y___N___?____
18. Do you like the teacher?______ Why?______	18. Y___N___?____
19. Do you like this class?______ Why?______	19. Y___N___?____
20. What do people (parents, other children) say about this class?______	20. P_____ N_____ Neut.____?___
21. Is this class a different kind of class from the others in this school?_____(How is it different?)______	21. Aware CRMD_____
22. Is the work too easy?....Hard?______ (How is it too _ _ _ ?)______	22. R_____ E_____ H_____ ?_____
23. Are you learning things that help you?______ (What things?)______ (How do they help you?)______	23. Y__N__?___
24. What do you do best in school?______	24. ______
25. What would you like to do better?______	25. ______
26. What would you like to do more of in school?______	26. ______

PUPIL INTERVIEW CONT'D

RATING OF ORAL COMMUNICATION

	V.G.	G.	Adequate	P.	V.P.
Comprehension of questions...	____	____	____	____	____
Spontaneity of response......	____	____	____	____	____
Clarity of response..........	____	____	____	____	____
Relevance of response........	____	____	____	____	____

Defects____

____

ATTITUDE DURING INTERVIEW

Enthusiastic.....____
Friendly.........____
Neutral..........____
Bored, uninterested____
Sullen, terse......____
Irritable..........____
Hostile, aggressive____
________________ ____
________________ ____

PERFORMANCE TESTS

Pattern Cutting Quality____ Time____

Form Board Score ____ Time____

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Appendix F

PUPIL BEHAVIOR CHECKLIST

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PN 22-242

BOARD OF EDUCATION OF THE CITY OF NEW YORK
BUREAU OF EDUCATIONAL RESEARCH
NEW YORK CITY STUDY OF MENTALLY HANDICAPPED CHILDREN

J. WAYNE WRIGHTSTONE
Director of Research

GEORGE FORLANO
Project Director

PUPIL BEHAVIOR CHECKLIST

by
J. Richard Lepkowski

Name________________________________ Sex____________ Birthdate____________________

School________________ Class__________ Date____________ Teacher____________________

DIRECTIONS:

The purpose of this checklist is to obtain a picture of pupil behavior. If an item contributes to a general description of the pupil named above, place a checkmark (✓) in the YES column in the place provided to the left of the item. If the item is not generally descriptive of the pupil, place a checkmark (✓) in the NO column to the right of the item.

EACH ITEM SHOULD HAVE A CHECKMARK IN EITHER THE YES OR NO COLUMN

YES		*NO*
	1. Popular, has many friends..........................	
	2. Helps others who are having difficulty	
	3. Reacts favorably to expectations of the group........	
	4. Dislikes most other children.......................	
	5. Responsible towards others' property	
	6. Finds untrue excuses when his work is not done	
	7. Distracts others from their work....................	
	8. Is easily distracted from his work	
	9. Works independently................................	
	10. Rejects authority of teacher	
	11. Gets along well in school activities	
	12. Does not seem to profit by experience	
	13. Is easily confused	
	14. Is alert, interested	
	15. Makes sensible, practical plans......................	
	16. Seeks attention, even if of a negative sort...........	
	17. Respects rules	
	18. Feelings easily hurt..................................	
	19. Aware of conventional codes of behavior	
	20. Often borrows and doesn't return	

Appendix G

PARENT QUESTIONNAIRE

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P I J
Y I O

Board of Education of the City of New York
Bureau of Educational Research
1458 York Avenue, New York 21, New York

The Board of Education is continually searching for methods to improve the education of our children. An important part of this program is learning the view of parents.

Please answer the questions below. If your answer to a question is Yes, put a circle around the word YES. If your answer to a question is NO, put a circle around the word NO.

You may sign this form if you wish, but it is not necessary. An addressed stamped envelope has been provided, so that you can mail the completed form at your earliest covenience. Thank you for your cooperation.

- -

1. Has your child been in this school longer than six months?..........YES NO
2. Does your child like school?..........YES NO
3. Has the class he is in helped your child to read better?..........YES NO
4. Has the class helped him to write better?..........YES NO
5. Has the class helped him to improve in arithmetic?..........YES NO
6. Has the class helped him to get along better with other children?..........YES NO
7. Has the class taught him to help with work around the house?..........YES NO
8. Has the class taught him to obey health and safety rules?..........YES NO
9. Has the class improved his ability to travel?..........YES NO
10. What else do you think the school could do to help your child?

____

____

____

Signed____________________

B G
I II

Appendix H

EMPLOYEES QUESTIONNAIRE

Board of Education of the City of New York
Bureau of Educational Research

Name______________________________ Birthdate______________

Address___________________________ Date left school__________

Please answer the following questions carefully. Please write plainly. (If you need help, ask a friend or relative.)

- -

A. If you are working, answer these questions:

1. What is the name and address of the company for whom you are working?

Name of company______________________________________

Address of company____________________________________

2. What kind of work do you do?_________________________

3. Who helped you get this job?__________________________

4. Are you working full time?______________Part time?__________

5. Do you like your job?____________ Why?________________

6. Did your school work help prepare you for this job?__________

Explain____

B. If you are not working, answer these questions:

1. How long have you been out of work?____________________

2. Are you looking for a job?____________________________

3. What kind of job are you looking for?__________________

4. Who is helping you to find a job?______________________

C. Please answer these questions:

1. How was your last year of school? (Put an X after Yes or NO.)

I learned more than other years................Yes____ No____
I learned about the same as other years........Yes____ No____
I learned less than other years................Yes____ No____

2. Do you plan to get additional training?_________________

What kind?____

Where?______________________________________

D. Name all the jobs you have had since leaving school. If you need more room, use the other side of this paper.

Kind of job	Name of company	How long did you work there?	Why did you leave this job?

Appendix I

EMPLOYER CHECKLIST

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Board of Education of the City of New York
Bureau of Educational Research

EMPLOYMENT CHECKLIST

Name of company__________________________ Address____________________

Please fill in the following information: ____________________

Name of person completing this form________________ Title__________

Number of employees in this company (or branch)______________

______________________ Job Title________________ Hours per week_____
(Employee's Name)

Duties____

DIRECTIONS: The purpose of this checklist is to obtain a picture of the employee's work characteristics. If an item contributes to a general description of the employee named above, place a checkmark ( ) in the YES column in the place provided to the left of the item. If the item is not generally descriptive of the employee, place a checkmark ( ) in the NO column to the right of the item.

EACH ITEM SHOULD HAVE A CHECKMARK IN EITHER THE YES OR NO COLUMN

YES		NO
______	1. Good attendance record..................................	______
______	2. Punctual..	______
______	3. Neat..	______
______	4. Polite..	______
______	5. Rejects authority of supervisor.........................	______
______	6. Gets along well with co-workers.........................	______
______	7. Directions must be oversimplified and frequently repeated...	______
______	8. Works neatly..	______
______	9. Adjusts to new situations easily........................	______
______	10. Completes assigned tasks...............................	______
______	11. Works independently....................................	______
______	12. Is alert, interested...................................	______

YES **NO**

______ 13. Respects rules.. ______

______ 14. Responsible towards other peoples' property........... ______

- -

______ Do you consider the employee a good worker and would you ______
hire another person like him?
Explain____

______ Do you think the employee's school training prepared him ______
adequately for this job?

Comments:____

____

____

____

Appendix J

TEACHER QUESTIONNAIRE ON CLASS INTERACTION

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Board of Education of the City of New York
New York City Study of Mentally Handicapped Children
Bureau of Educational Research

TEACHER QUESTIONNAIRE ON CLASS INTERACTION

Class________Teacher________________School________Register__________
Register as of October 1, 1957__________.
How many other CRMD classes in your school as of May 1, 1958? ____________

Place a check ( ) after the type of class you now have:

1. Reorganized 'High Educable' Class ____
2. Reorganized 'Low Educable' Class ____
3. Non-Reorganized Class ____

Teachers of Reorganized Classes check one:

Vestibule____ Primary____ Intermediate____ Jr. H____ High____

Teachers of Non-Reorganized Classes check one:

Vest.____	Young Mixed____	Int. Mixed____	Older Mixed____	W.A.R.____
	Young Boys ____	Int. Boys ____	Older Boys ____	
	Young Girls____	Int. Girls____	Older Girls____	

General Instructions:

The purpose of this form is to gather information about the degree to which your class interacts with other classes in your school. This information is important because of the light it may shed on the effects of the recent reorganization of CRMD classes in this city.

After completing this questionnaire, please mail it in the enclosed self-addressed stamped envelope no later than MAY 26, 1958.

PART I

Instructions:

The purpose of this section is to determine:

1. What activities are generally available in your school?
2. How many children in your class participate in each activity?
3. How many children in your class are, or have been, excluded from any activity? (By 'exclusion' we mean that the child might have been willing to participate, but he was prevented from doing so, either for his welfare or the welfare of others.

For example, a child may be excluded from assembly for a month because he is a behavior problem and tends to cause a disturbance. Or, another child may not go on several trips with the rest of the class because he is too immature. Still another child may not go to gym during the term because of a physical disability.

Please fill out the questionnaire as follows:

In Column 1, place a check after those activities generally available in your school. Space has been left for you to add any other activities.

In Column 2, write the number of children in your class who participate in each activity.

In Column 3, place a check ( ) if the children in your class participate in this activity with children from other CRMD classes.

In Column 4, place a check ( ) if the children in your class participate in this activity with children from regular classes.

In Column 5, write the names of the children in your class who are, or have been, excluded from this activity for at least one week since October, 1957.

Activity	1. Available in school	2. Number of children who participate	3. Participate with CRMD classes	4. Participate with regular classes	5. Names of children excluded
Assembly					
Clubs					
Gymnasium					
Intramural Sports					
Lunchroom					
Orchestra					
School Library					
School Teams					
Safety Patrol					
Schoolyard					
Shops					

Activity	1. Available in school	2. Number of children who participate	3. Participate with CRMD classes	4. Participate with regular classes	5. Names of children excluded
Speech Class					
Remedial Reading					
Trips					
Visual Aids Program					
Other Activities (Please add)					

PART III

Instructions:

In this section, please list the names of the children in your class who belong in either of the following two categories.

1. Names of children who are liked or accepted by almost everyone else in class. If none, please write 'none'.

2. Names of children who are disliked or rejected by almost everyone else in class. If none, please write 'none'.

Rating Scale (Columns 4 - 13)

1. considerably poorer
2. slightly poorer
3. no change
4. slightly improved
5. considerably improved

			GROSS MOTOR COORDINATION	EYE-HAND COORDINATION	INTELLIGIBILITY AND SPONTANEITY OF SPEECH	SOCIAL MATURITY	EMOTIONAL STABILITY	WILLINGNESS TO LEARN
1. Child's Name	2. Sex	3. In Class Oct.1,1957	4. Change	5. Change	6. Change	7. Change	8. Change	9. Change

Teacher's Name________________ Class __________ School____________

Rating Scale (Columns 4 - 13)

1. considerably poorer
2. slightly poorer
3. no change
4. slightly improved
5. considerably improved

			PUNCTUALITY AND ATTENDANCE	SCHOOL WORK HABITS	RANGE AND DIVERSITY OF INTERESTS	HEALTH HABITS	RECOMMENDATION FOR PLACEMENT (Code Letter)
1. Child's Name	2. Sex	3. In Class Oct.1,1957	10. Change	11. Change	12. Change	13. Change	14. Change

Teacher's Name__________________ Class____________ School____________

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Appendix K

PUPIL TURNOVER

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TABLE XCVI

Pupil Turnover Rate by Month For the Total Study Population for the 1957-1958 School Year

Month	Legal Register	Actual Register	Total Withdrawals	Total New Admissions	Total Turnover	% Turnover
			Experimental			
September	1778	1220	195	152	347	28.44
October	2922	1941	81	112	193	9.94
November	2800	1911	74	93	167	8.74
December	2272	1644	28	52	80	4.86
January	2888	2002	94	114	208	10.39
February	2840	1986	74	100	174	8.76
March	2876	1996	73	74	147	7.36
April, May and June data not available						Median % = 8.76
			Control			
September	2496	1841	109	143	212	11.52
October	2673	1915	99	90	189	9.87
November	2872	2118	104	77	181	8.55
December	2542	1894	59	19	78	4.12
January	2736	2073	118	105	223	10.76
February	2863	2117	133	129	262	12.38
March	2822	2123	104	91	195	9.19
April	2187	1654	58	42	100	6.05
May and June data not available						Median % = 9.53

Note: No true overall estimate of the percent of pupil turnover can be made since individual pupils might appear more than once in these tallies, e.g. a pupil may have been transferred from one school to another and would appear in these statistics both as a withdrawal and as an admission.

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Appendix L

MC BEE SORTING CARDS

MALE C 5-5 5-6 6-6 6-7 7-7 7-8 8-8 8-9 9-9 9-10 10-10 10-11 11-11 11-12 12-12 12-13 13-13 13-14 14-14 14-15 15-15 15-16 16-16 16-17 17-17 17-18 18+ <50 50-54 55-59 60-64 65-69 70-74 >75 CURRENT OLD ED I ED II FOR. LANG. IN HOME

CHRONOLOGICAL AGE I.Q. I.Q.

PUPIL DATA RECORD

BOARD OF EDUCATION

BUREAU OF EDUCATIONAL RESEARCH

NEW YORK CITY STUDY OF MENTALLY HANDICAPPED CHILDREN

LAST NAME ______ FIRST NAME ______ INIT. ______

ADDRESS ______ BORO ______ SEX ______

BIRTH DATE ______ BIRTHPLACE ______

YEARS IN U.S.A. ______ YEARS IN N.Y.C. ______

OCCUPATIONS: FATHER ______

MOTHER ______

DOES CHILD LIVE WITH BOTH PARENTS? YES ______ NO ______

IF NO, EXPLAIN ______

NO. BROS. ______ AGES ______ NO. SISTERS ______ AGES ______

LANGUAGE(S) SPOKEN IN HOME ______

MOTOR COORDINATION: ______

VERY POOR POOR AVERAGE FOR C.A. SUPERIOR VERY SUPERIOR

HANDEDNESS: R ______ L ______ IF PROBLEM, EXPLAIN: ______

SPEECH DIFFICULTY (SPECIFY) ______

UNCORRECTED HEALTH PROBLEMS ______

OTHER PHYSICAL DEFECTS ______

TEACHER ______ SCHOOL ______

CLASS DESIGNATION ______ TYPE CLASS ______

TOTAL YEARS AND MONTHS: WITH CURRENT TEACHER ______ IN CURRENT SCHOOL ______

IN CRMD ______ IN OTHER THAN CRMD PROGRAM ______

SCHOOL LAST TERM ______ CLASS LAST TERM ______

LAST I.Q. ______ TEST ______ DATE ______

DOES IQ REFLECT CHILD'S INTELLECTUAL FUNCTIONING IN CLASS? YES ✓ NO ______

IF NO, EXPLAIN ______

PREVIOUS IQ ______ TEST ______ DATE ______

READING GRADE ______ TEST ______ DATE ______

TEACHER'S ESTIMATE OF RG AT TIME OF LAST TEST ______

ARITHMETIC GRADE ______ TEST ______ DATE ______

TEACHER'S ESTIMATE OF AG AT TIME OF LAST TEST ______

SOCIAL MATURITY ______ EMOTIONAL STABILITY ______

CORE NUMBER AND TOPIC: ______

COMMENTS:

CHRONOLOGICAL AGE

RANGE	BOYS	GIRLS
6-7		
8-9		
10-11		
12-13		
14-15		
16-17		
ABOVE 17		
TOTAL		

INTELLIGENCE QUOTIENT

RANGE	BOYS	GIRLS
BELOW 50		
50-54		
55-59		
60-64		
65-69		
70-75		
ABOVE 75		
UNDETERMINED		

J29611X

1 2 3 4 5 6 7 8 9

PARENT OCCUP. 1 2 3 4 5

MATHEMATICS CONCEPTS I II III IV V FUND. 1 2 3 4 5

BK M Q BX R

VEST P.I IN.I J.H. P.II IN.II L.P. YM YB YG OM OB OG WAR

SOCIAL MAT. 1 2 3 4 5

EMOTIONAL STAB. 1 2 3 4 5

CORE 1 2 3 4 5 6 7 8

SEPARATED ORPHANED SEMI-ORPH

DIAGNOSIS R N B P O

TIME IN CRMD MONTHS 0-6 7-12 13-18 19-24 YEARS 2-3 3-4 4-5 5-6

SCHOOL ADJUSTMENT 1 2 3 4 5

READING RR. 1 2 3 4 5

10 11 12 13 14 15 16 17 18

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	TEST	1	2	DIF 2-1	3	DIF 3-2	DIF 3-1	TEST	1	2	DIF 2-1	3	DIF 3-2	DIF 3-1
	MATH. CON.													
	ARITH. FUN.													
	CORE A													
	B													
	C													
	D													
	SCHOOL ADJUSTMENT													
	READING TEST MARK													
METROPOLITAN ACHIEVEMENT	READING													
	VOCABULARY													
	AV. READING													
	ARITH. FUND.													
	ARITH. PROB.													
	AV. ARITH.													
	LANG. USAG.													
	SPELLING													
	AV. ACH.													

Appendix M

SUPERVISORS RATINGS OF TEACHERS

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PN 22-242
133-20-9-59

New York City Study of Mentally Handicapped Children

Teacher____________________ School________________ Dist. _________

. . . .

In accordance with the decision reached at the meeting with supervisors of Bureau CRMD on Friday, September 11, 1959, the following scale has been devised for the rating of teachers of control and experimental classes participating in the New York City Study of Mentally Handicapped Children.

After rating the above named teacher on each of the four factors below, cut this sheet along the dotted line so as to remove the name at the top. Return all rating sheets to Dr. Harnett on or before September 18, 1959.

Indicate with an (X) the number of your rating for each of the following four factors. Sum the four ratings and place this total in the box below.

	Poor	Fair	Average or Satisfactory	Very Good	Superior or Outstanding
A. Teacher ability and skill (methods and content)	1	2	3	4	5
B. Teacher-pupil relations (sympathy and understanding, etc.)	1	2	3	4	5
C. Class Management (routines, etc.)	1	2	3	4	5
D. Learning environment (physical and psychological)	1	2	3	4	5

Sum of above four ratings ☐

On the basis of your observation and experience, rate this teacher on the amount of improvement as a teacher she (he) has evidenced since participating in this study (whether as a participating control or participating experimental teacher).

Considerably less effective	Moderately less effective	Remained Same	Moderately more effective	Considerably more effective
1	2	3	4	5

I II
Con